1982 Census of Manufactures

MC82-I-36D

INDUSTRY SERIES

Communication Equipment, Including Radio and TV

Industries 3651, 3652, 3661, and 3662

U.S. Department of Commerce
BUREAU OF THE CENSUS

The publications
from the 1982 Economic and
Agriculture Censuses are dedicated
to the memory of Shirley Kallek,
Associate Director for Economic Fields.
During her career at the Bureau of the
Census (1955 to 1983), she continually
directed efforts to improve
the timeliness and accuracy of
economic statistics.

1982 Census of Manufactures

MC82-I-36D

INDUSTRY SERIES

Communication Equipment, Including Radio and TV

3651 Radio and TV Receiving Sets
3652 Phonograph Records and Prerecorded Tape
3661 Telephone and Telegraph Apparatus
3662 Radio and TV Communication Equipment

Issued March 1985

U.S. Department of Commerce
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BUREAU OF THE CENSUS
John G. Keane,
Director

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ECONOMIC CENSUSES OVER TIME

The early beginnings of America's industrial output were first measured in the United States in the 1810 Decennial Census and again in 1820, when questions on manufacturing were included with those for population. Beginning with the 1840 Decennial Census, there were enumerations of manufactures and mineral industries at 10-year intervals up to and including the year 1900 for manufactures and 1940 for mineral industries. The latter census was again taken for 1954, 1958, 1963, and 1967.

Because of the increasing dominance of manufacturing in the early 20th century, Congress directed that quinquennial censuses of manufactures be taken beginning in 1905. However, from 1919 through 1939, these censuses were conducted every 2 years. The need for war-related current surveys in the early 1940's postponed the next census of manufactures until 1948 (for 1947). That census was again taken for 1954, 1958, 1963, and 1967.

Retail and wholesale trade data were first collected in 1930, and in 1933 information on selected service industries was added to the data-collection operation. These business censuses, as they were called, were again taken for 1935, 1939 (as part of the 1940 decennial program), 1948, 1954, 1958, 1963, and 1967.

Information on construction industries was obtained first in 1930 and again for 1935 and 1939. Data for the full spectrum of construction industries were not gathered again until 1968 (for 1967).

The need for transportation data to supplement information available from existing governmental or private sources was recognized by Congress in the late 1950's and early 1960's. The census of transportation (consisting of several surveys) was taken first for 1963 and again for 1967.

Since 1967, all of the above censuses have been taken quinquennially as part of the Census Bureau's economic census program. (For the 1977 censuses, the coverage of the service industries was broadened from "selected services" to "all services, except religious organizations and private households." A total of 41 additional four-digit standard industrial classifications[1] (SIC's) in 7 SIC major groups was added to the scope of the census. While most of the industries included for the first time for 1977 were covered again for 1982, some were not, i.e., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions and similar labor organizations; and political organizations.)

The first manufacturing census for an outlying area was conducted in Puerto Rico for the year 1909. Thereafter, with the exception of 1929, a census was taken at 10-year intervals through 1949. The first censuses of retail trade, wholesale trade, and selected service industries in Puerto Rico were conducted for 1939. These censuses also were taken for the years 1949, 1954, 1958, 1963, and 1967. A census of construction industries was introduced first in Puerto Rico for 1967. These censuses of Puerto Rico have been taken since then for the years 1972, 1977, and 1982.

Censuses of manufactures, retail trade, wholesale trade, and selected service industries were conducted in Guam and the Virgin Islands of the United States for 1958, 1963, 1967, 1972, 1977, and 1982. Censuses of mineral industries were taken in the Virgin Islands of the United States for the years 1958, 1963, and 1967 but not since that time. A census of construction industries was also undertaken in these areas for 1972, 1977, and 1982.

Retail trade, wholesale trade, selected service industries, manufacturing, and construction industries were canvassed for the first time in the Northern Mariana Islands in 1983 (for 1982).

For 1982, the economic censuses and agriculture censuses were conducted concurrently.

USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source for facts about the structure and functioning of the Nation's economy and provide essential information for government, business, industry, and the general public. They provide an important part of the framework for such composite measures as the gross national product, input-output measures, indexes of industrial production, and indexes measuring productivity and price levels. Information from the censuses is used to establish sampling frames and as benchmarks for current surveys of business activity, which are essential for measuring short-term economic conditions.

State and local governments use census data to assess business activities within their jurisdictions. The private sector uses the data to forecast general economic conditions; analyze sales performance; lay out sales territories; allocate funds for advertising; decide on locations for new plants, warehouses, or stores; and measure potential markets in terms of size, geographic areas, kinds of business, and kinds of products made or sold.

Following every census, thousands of businesses and other users purchase reports. Likewise, census facts are disseminated widely by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. All 1982 data are available on microfiche from the U.S. Government Printing Office and most data on computer tape from the Census Bureau. Finally, the more than 50 State Data Centers also are suppliers of economic census statistics.

AUTHORITY AND SCOPE OF THE ECONOMIC CENSUSES

The economic censuses are required by law under title 13 of the United States Code, sections 131, 191, and 224, which directs that they be taken at 5-year intervals for the years ending in 2 and 7. The 1982 Economic Censuses covered manufacturing, mining, construction industries, retail trade, wholesale trade, service industries, and selected transportation activities. Special programs also cover minority-owned and women-owned businesses. The next economic censuses are scheduled to be taken in 1988 for the year 1987.

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[1]**Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-00500176-0.

CENSUS OF MANUFACTURES

General

The 1982 Census of Manufactures is the 31st census of manufactures of the United States. For 1982, it was conducted jointly with the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses.

This report, from the 1982 Census of Manufactures, is one of a series of 82 industry reports, each of which provides statistics for groups of related industries. Additional separate reports will be issued for each State and on special subjects, such as size of establishments, legal form of organization, and fuels and electric energy consumed.

These separate reports will subsequently be issued as portions of the final census volumes. Volume I, Subject Statistics, will show comparative statistics for industries, States, and standard metropolitan statistical areas. It also will show selected subjects, such as concentration ratios in manufacturing, selected materials consumed, manufacturing activity in government establishments, and water use in manufacturing. Volume II, Industry Statistics, will be a consolidation of reports for the 82 groups of industries showing the same information that is shown in this report. Volume III, Geographic Area Statistics, will contain establishment-based data (number of establishments, employment, payroll, value added by manufacture, and capital expenditures) for each State and its important standard metropolitan statistical areas, counties, and places, by industry groups and important individual industries. Totals for "all manufacturing" will be shown for counties and places with more than 450 manufacturing employees. The introduction to the final volumes will discuss, at greater length, many of the subjects described in this introduction. For example, the volume text will discuss the relationship of value added by manufacture to National income by industry of origin, the changes in statistical concepts over the history of the censuses, and the valuation problems arising from intracompany transfers between manufacturing plants of a company and between manufacturing plants and sales offices and sales branches of a company.

Scope of Census and Definition of Manufacturing Industries

The 1982 Census of Manufactures covers all establishments employing one person or more primarily engaged in manufacturing as defined in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 Supplement.[1] This is the system of industrial classification developed over a period of years by experts on classification in government and private industry under the guidance of the Office of Management and Budget. This system of classification is in general use among government agencies as well as organizations outside the government.

The SIC manual defines manufacturing as the mechanical or chemical transformation of inorganic or organic substances into new products. The assembly of component parts of products is also considered to be manufacturing if the resulting product is neither a structure nor other fixed improvement. These activities are usually carried on in plants, factories, or mills that characteristically use power-driven machines and materials handling equipment.

[1]**Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-00500176-0.

Manufacturing production is usually carried on for the wholesale market, for transfers to other plants of the same company, or to the order of industrial users rather than for direct sale to the household consumer. Some manufacturers in a few industries sell chiefly at retail to household consumers through the mail, through house-to-house routes, or through salespersons. Some activities of a service nature (enameling, engraving, etc.) are included in manufacturing when they are performed primarily for the trade. They are considered nonmanufacturing when they are performed primarily to the order of the household consumer.

Relationship Between Annual Survey of Manufactures and Census of Manufactures

The Bureau of the Census conducts the annual survey of manufactures (ASM) in each of the 4 years between the censuses of manufactures. The ASM is based on a scientifically selected sample of approximately 55,000 establishments and collects the same industry statistics (employment, payroll, value of shipments, etc.) as the census of manufactures. In addition to collecting the information normally requested on the census form, the establishments in the ASM sample are requested to supply detailed information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services.

Establishment Basis of Reporting

The census of manufactures and the annual survey of manufactures are conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1982, as in earlier years, a minimum size limit was set for including establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than $5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company (see Auxiliaries).

Manufacturing Universe and Census Report Forms

The 1982 Census of Manufactures universe includes approximately 345,000 establishments. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures. The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in this publication are described below.

1. Small Single-Unit Companies Not Sent a Report Form

In the 1982 Census of Manufactures, approximately 140,000 small single-establishment companies were excused from filing reports. Selection of these small

establishments was done on an industry-by-industry basis and was based on annual payroll and total shipments data as well as on the industry classification codes contained in the administrative records of other Federal agencies. The cutoffs were selected so that these administrative records cases would account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed report forms.

Information on the physical location of the establishment, as well as information on payrolls, receipts (shipments), and industry classification, was obtained from the administrative records of other Federal agencies under special arrangements, which safeguarded their confidentiality. Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative records files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative record cases were given only a two- or three-digit SIC group. For the 1982 Census of Manufactures, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments Sent a Report Form

The 205,000 establishments covered in the mail canvass were divided into three groups:

a. **ASM sample establishments**—This group consisted of approximately 55,000 establishments covering all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size (see appendix, Annual Survey of Manufactures).

In a census of manufactures year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. Results of the ASM inquiries are included in tables 3c and 3d of this report.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the approximately 450 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries, as well as secondary products and miscellaneous services that establishments classified in these industries were likely to be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of cases, the quantity of the product shipped during the survey year. Space was also provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

Finally, a wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. **Large and medium establishments (non-ASM)**—Approximately 100,000 establishments were included in this group. A variable cutoff, based on administrative records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. **Small single-unit establishments (non-ASM)**—This group consisted of approximately 50,000 establishments. For those industries where application of the variable cutoff for administrative records cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or "short" form was used. These establishments received one of the approximately 80 versions of the short form, which requested summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics; the same

data were collected on the short as well as the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the values of the n.s.k. categories.

Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the paperbound geographic area series, the bound volumes of the census of manufactures, and in a report issued as part of the 1982 Enterprise Statistics survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two or more establishments. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting, tax accounting, company sales and profit reports, and personnel accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

Industry Classification of Establishments

Each of the establishments covered in the census was classified in one of approximately 450 manufacturing industries in accordance with the industry definitions in the SIC system. Under this system of classification, an industry is generally defined as a group of establishments producing a single product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of plants must be significant in terms of its number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively became narrower with successive additions of numerical digits. There are 20 major groups (two-digit SIC), 143 industry groups (three-digit SIC), and approximately 450 industries (four-digit SIC). The product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 1,500 classes of products, identified by a five-digit code, and about 11,000 products, identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in making those products. For example, establishments engaged in blast furnace operations, refining of nonferrous metals from ore, or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or the change has occurred for two successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year (see appendix, Annual Survey of Manufactures). However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC level, should be viewed with caution. This is true particularly for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in tables 6a through 6c represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the

composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios, which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfer of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

Value of Shipments for the Industry Compared With Value of Product Shipments

This industry report shows value of shipments data for industries and products. In tables 1a through 5a, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Product shipments shown in table 6a represent the total value of shipments of products classified as primary to an industry that were shipped by all manufacturing establishments regardless of their industry classification.

CENSUS DISCLOSURE RULES

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this item may be given even though other information is withheld.

The disclosure analysis for the industry statistics in tables 1a through 5a of this report is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line has been suppressed. However, the suppressed data are included in higher level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

MICROFICHE AND COMPUTER TAPES

All the data in this report are available on microfiche. Selected data are also available on computer tape.

In addition to selected published data being on computer tape, one major data series, the location of manufacturing plants, will be available only on computer tape. This series presents the number of establishments by employment size class by four-digit SIC industry codes for States, counties, and places of 2,500 inhabitants or more. These data are available for both State and county by industry, and State and place by industry.

Microfiche reports are sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Computer tapes are sold by the Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

SPECIAL TABULATIONS

Special tabulations of data collected in the 1982 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief, Industry Division, Bureau of the Census, Washington, D.C. 20233.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

Users' Guide for Locating Statistics

[For explanation of terms, see appendixes]

	Item	Four-digit industry statistics		
		Historical	Operating ratios	By geographic area
1	Number of companies	1a		
2	Number of manufacturing establishments	1a		2
	Employment and payroll:			
3	Number of employees	1a	1b	2
4	Payroll	1a	1b	2
5	Supplemental labor costs			
6	Production workers	1a	1b	2
7	Production-worker hours	1a	1b	2
8	Production-worker wages	1a	1b	2
	Shipments, cost of materials, and value added:			
9	Value of shipments (four-digit)	1a	1b	2
10	Product class shipments (five-digit)			
11	Product shipments (seven-digit)			
12	Value added by manufacture	1a	1b	2
13	Cost of materials	1a	1b	2
14	Fuels and electric energy			
15	Materials consumed by kind			
	Inventories:			
16	Total, end of year	1a		
17	By method of valuation			
18	By stage of fabrication			
	Capital expenditures, assets, rental payments, and purchased services:			
19	New capital expenditures	1a		2
20	Used plant and equipment expenditures			
21	Gross assets			
22	Depreciation			
23	Retirements of buildings and machinery			
24	Rental payments			
25	Purchased services			
	Ratios:			
26	Specialization	1a		
27	Coverage	1a		

*Number of companies with shipments of over $100 thousand.
**Detailed information shown.

in This Report by Table Number

Four-digit industry statistics—Con.				Five-digit product class and seven-digit product statistics				
Summary and supplemental	By employment size	By industry and product class specialization	Materials consumed by kind	Industry-product analysis	Product shipments	Product class by geographic area	Historical product class	
3a					*6a			1
**3a	4	5a						2
3a	4	5a						3
3a	4	5a						4
**3d								5
**3a	4	5a						6
**3a	4	5a						7
3a	4	5a						8
3a	4	5a		5b, 5c				9
				5b, 5c	6a	6b	6c	10
					6a			11
3a	4	5a						12
**3a	4	5a						13
3a, 3d								14
			7					15
3b, 3c	4							16
3b, 3c								17
3b								18
**3a, **3d	4	5a						19
**3a, **3d								20
**3d								21
**3d								22
**3d								23
**3d								24
**3d								25
3a				5b				26
3a				5b				27

Communication Equipment, Including Radio and TV

CONTENTS

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DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

COMMUNICATION EQUIPMENT, INCLUDING RADIO AND TV

This report shows 1982 Census of Manufactures statistics for establishments classified in each of the following industries:

SIC Code	Title
3651	Radio and TV Receiving Sets
3652	Phonograph Records and Prerecorded Tape
3661	Telephone and Telegraph Apparatus
3662	Radio and TV Communication Equipment

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments, but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1a-5a) with product statistics (table 6a) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments classified in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other government agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions contained in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 supplement.[1]

INDUSTRY 3651, RADIO AND TV RECEIVING SETS

This industry comprises establishments primarily engaged in the manufacture of electronic equipment for home entertainment. This industry also includes establishments primarily engaged in the manufacture of public address systems and music distribution apparatus. Establishments primarily engaged in the manufacture of records are classified in industry 3652, radio and television receiving-type tubes in industry 3671, and television receiving-type cathode-ray tubes in industry 3672.

In the 1982 Census of Manufactures, Industry 3651, Radio and TV Receiving Sets, recorded employment of 48.4 thousand. The total value of shipments for establishments classified in this industry was $6,064 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 35 percent below the 74.6 thousand reported in 1977. The leading States in employment in 1982 were Indiana, California, Tennessee, and Illinois, accounting for approximately 55 percent of the industry's 1982 employment. Data for Indiana have been withheld to avoid disclosing data for individual companies. These same States were the leaders in 1977, when they accounted for approximately 60 percent of the industry's employment, although there has been some shift in the relative importance of individual States.

Compared with 1981, employment decreased 20 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3651 shipped $5,145 million of products primary to the industry, $586 million of secondary products, and had $333 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1977, this specialization ratio was 94 percent.

Establishments in this industry also accounted for 95 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 98 percent. The products primary to industry 3651, no matter in what industry they were produced, appear in table 6a and aggregate to $5,415 million in current prices.

The total cost of materials and services used by establishments classified in the radio and TV receiving sets industry amounted to $3,967 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 3 percent of total value of shipments.

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[1] **Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-005-00176-0.

INDUSTRY 3652, PHONOGRAPH RECORDS AND PRERECORDED TAPE

This industry comprises establishments primarily engaged in the manufacture of phonograph records and prerecorded magnetic tape. Establishments primarily engaged in the manufacture of electronic equipment for home entertainment, except records are classified in industry 3651. Establishments primarily engaged in the manufacture of blank magnetic recording tape are classified in industry 3679.

In the 1982 Census of Manufactures, Industry 3652, Phonograph Records and Prerecorded Tape, recorded employment of 17.1 thousand. The total value of shipments for establishments classified in this industry was $1,769 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 26 percent below the 23.1 thousand reported in 1977. The leading States in employment in 1982 were Indiana, California, New Jersey, and New York, accounting for approximately 60 percent of the industry's 1982 employment. Data for Indiana have been withheld to avoid disclosing data for individual companies. These same States were the leaders in 1977, when they accounted for approximately 75 percent of the industry's employment, although there has been some shift in the relative importance of individual States.

Compared with 1981, employment decreased 4 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3652 shipped $1,533 million of products primary to the industry, $3 million of secondary products, and had $232 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 99 + percent (specialization ratio). In 1977, this specialization ratio also was 99 percent.

Establishments in this industry also accounted for 90 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 99 percent. The products primary to industry 3652, no matter in what industry they were produced, appear in table 6a and aggregate to $1,695 million in current prices.

The total cost of materials and services used by establishments classified in the phonograph records and prerecorded tape industry amounted to $579 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 12 percent of total value of shipments.

INDUSTRY 3661, TELEPHONE AND TELEGRAPH APPARATUS

This industry comprises establishments primarily engaged in the manufacture of wire telephone and telegraph equipment and parts especially designed for telephone and telegraph use.

In the 1982 Census of Manufactures, Industry 3661, Telephone and Telegraph Apparatus, recorded employment of 136.5 thousand. The total value of shipments for establishments classified in this industry was $13,394 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 10 percent above the 124.4 thousand reported in 1977. The leading States in employment in 1982 were Illinois, California, Massachusetts, and North Carolina, accounting for approximately 46 percent of the industry's 1982 employment. This represents a shift from 1977 when Massachusetts, Indiana, Illinois, and California accounted for approximately 45 percent of the industry's employment.

Compared with 1981, employment decreased 7 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3661 shipped $11,597 million of products primary to the industry, $617 million of secondary products, and had $1,180 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 95 percent (specialization ratio). In 1977, this specialization ratio was 94 percent.

Establishments in this industry also accounted for 98 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 97 percent. The products primary to industry 3661, no matter in what industry they were produced, appear in table 6a and aggregate to $11,887 million in current prices.

The total cost of materials and services used by establishments classified in the telephone and telegraph industry amounted to $6,358 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 3 percent of total value of shipments.

INDUSTRY 3662, RADIO AND TV COMMUNICATION EQUIPMENT

This industry comprises establishments primarily engaged in the manufacture of (1) radio and television broadcasting equipment; (2) electric communication equipment and parts, except

telephone and telegraph; (3) electronic field detection apparatus, light and heat emission operating apparatus, object detection apparatus and navigational electronic equipment, and aircraft and missile control systems; (4) high-energy particle accelerator systems and equipment designed and sold as a complete package for radiation therapy, irradiation, radio-graphic inspection, and research (linear accelerators, betatrons, dynamotrons, Vandergraff generators, resonant transformers, insulating core transformers, etc.); (5) high-energy particle electronic equipment and accessories sold separately for the construction of linear accelerators, cyclotrons, synchrotrons, and other high-energy research installations (transmitters/modulators, accelerating waveguide structures, pulsed electron guns, vacuum systems, cooling systems, etc.); and (6) other electric and electronic communication and signaling products, not elsewhere classified. Establishments primarily engaged in the manufacture of transmitting tubes are classified in industry 3673.

In the 1982 Census of Manufactures, Industry 3662, Radio and TV Communication Equipment, recorded employment of 464.1 thousand. The total value of shipments for establishments classified in this industry was $33,028 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 39 percent above the 334.1 thousand reported in 1977. The leading States in employment in 1982 were California, New York, Texas, and Florida, accounting for approximately 51 percent of the industry's 1982 employment. This represents a shift from 1977 when California, New York, Texas, and Massachusetts accounted for approximately 55 percent of the industry's employment.

Compared with 1981, employment increased 9 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3662 shipped $29,437 million of products primary to the industry, $2,303 million of secondary products, and had $1,288 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 93 percent (specialization ratio). In 1977, this specialization ratio was 92 percent.

Establishments in this industry also accounted for 91 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 92 percent. The products primary to industry 3662, no matter in what industry they were produced, appear in table 6a and aggregate to $32,217 million in current prices.

The total cost of materials and services used by establishments classified in the radio and TV communication equipment industry amounted to $12,038 million in current prices. Data on specific materials consumed appear in table 7.

The establishments in this industry with less than 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 5 percent of total value of shipments.

Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year[1]	Companies[2] (no.)	All establishments[3] Total (no.)	All establishments[3] With 20 employees or more (no.)	All employees Number (1,000)	All employees Payroll (million dollars)	Production workers Number (1,000)	Production workers Hours (millions)	Production workers Wages (million dollars)	Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories[4] (million dollars)	Ratios Specialization (percent)	Ratios Coverage (percent)
INDUSTRY 3651, RADIO AND TV RECEIVING SETS															
1982 Census	435	458	182	48.4	862.3	35.4	65.3	546.2	2 010.6	3 967.2	6 063.9	140.9	888.4	90	95
1981 ASM	(NA)	(NA)	(NA)	60.6	1 038.4	44.6	83.2	663.5	2 608.1	4 549.4	7 057.8	187.2	1 145.5	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	65.0	996.1	47.7	90.9	625.4	2 705.2	4 177.3	6 798.8	159.3	1 105.2	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	68.4	945.7	51.1	96.2	618.3	2 559.1	4 029.4	6 572.7	165.2	1 016.9	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	76.7	946.3	57.5	105.2	612.2	2 617.7	3 902.6	6 441.9	118.5	1 004.2	(NA)	(NA)
1977 Census	547	581	192	74.6	852.4	57.6	106.6	570.0	2 351.8	3 393.9	5 732.6	105.8	835.0	94	98
1976 ASM	(NA)	(NA)	(NA)	71.5	785.3	53.8	100.3	505.3	2 090.1	2 992.5	5 056.4	86.7	755.8	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	68.8	693.8	52.3	96.3	428.8	1 542.5	2 760.4	4 443.6	75.2	750.0	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	87.7	734.1	68.9	124.1	499.1	1 819.2	3 129.9	4 865.0	104.5	913.3	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	92.1	742.6	75.0	140.7	527.5	2 214.2	3 090.2	5 146.8	79.6	860.8	(NA)	(NA)
1972 Census	344	372	164	86.5	651.4	69.8	132.4	453.6	1 807.8	2 715.4	4 440.1	58.6	664.9	95	99
1971 ASM	(NA)	(NA)	(NA)	89.9	641.8	70.1	133.8	436.9	1 537.5	2 475.2	4 048.6	36.4	635.2	(NA)	(NA)
1970 ASM	(NA)	(NA)	(NA)	89.7	607.0	68.4	130.7	392.4	1 390.6	2 196.9	3 629.8	51.0	671.4	(NA)	(NA)
1969 ASM	(NA)	(NA)	(NA)	105.5	654.5	84.8	163.1	443.5	1 584.9	2 545.5	4 053.6	59.6	728.0	(NA)	(NA)
1968 ASM	(NA)	(NA)	(NA)	112.5	667.3	91.9	175.4	465.1	1 558.1	2 657.7	4 254.6	36.2	662.8	(NA)	(NA)
1967 Census	303	340	187	116.7	643.6	96.2	183.4	462.6	1 404.5	2 486.0	3 846.3	86.1	726.0	94	99
INDUSTRY 3652, PHONOGRAPH RECORDS AND PRERECORDED TAPE															
1982 Census	548	574	131	17.1	292.0	11.8	23.6	159.4	1 189.5	578.8	1 768.9	36.4	189.8	99+	90
1981 ASM	(NA)	(NA)	(NA)	17.8	285.0	12.9	25.6	166.8	1 120.0	612.1	1 724.2	[5]39.3	210.3	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	22.5	297.5	16.7	32.9	186.3	1 066.9	648.9	1 716.8	[5]50.8	222.2	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	25.8	310.6	19.6	39.7	214.6	942.1	613.6	1 519.1	[5]52.3	226.3	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	26.3	304.1	19.8	39.9	203.0	911.0	637.2	1 493.9	61.7	201.6	(NA)	(NA)
1977 Census	679	709	133	23.1	244.6	17.8	37.2	170.0	727.3	461.5	1 181.7	29.8	121.3	99	99
1976 ASM	(NA)	(NA)	(NA)	18.1	170.7	14.1	27.9	113.8	453.8	309.0	766.6	20.3	81.1	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	17.5	159.6	13.3	25.4	100.6	391.2	266.5	659.5	15.0	89.2	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	19.7	151.7	14.9	28.4	99.4	351.9	242.0	586.9	20.5	94.7	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	20.1	144.3	15.5	29.5	96.2	355.2	209.6	564.9	26.2	74.3	(NA)	(NA)
1972 Census	538	567	119	20.3	146.5	15.8	30.8	100.1	375.6	191.5	567.7	16.9	67.5	98	99
1971 ASM	(NA)	(NA)	(NA)	18.7	128.2	14.6	29.1	88.3	314.6	189.1	495.2	12.3	74.9	(NA)	(NA)
1970 ASM	(NA)	(NA)	(NA)	18.7	115.6	14.4	28.7	79.4	281.8	165.9	438.6	21.2	66.5	(NA)	(NA)
1969 ASM	(NA)	(NA)	(NA)	17.5	104.5	13.9	28.5	72.6	263.3	149.7	406.8	16.9	55.6	(NA)	(NA)
1968 ASM	(NA)	(NA)	(NA)	14.5	85.1	11.4	23.7	59.8	208.3	106.2	317.6	5.5	37.6	(NA)	(NA)
1967 Census	306	321	73	13.6	76.6	11.0	22.2	54.0	182.3	95.2	276.4	7.1	38.7	99	99
INDUSTRY 3661, TELEPHONE AND TELEGRAPH APPARATUS															
1982 Census	259	333	210	136.5	3 021.2	85.6	158.4	1 614.5	7 120.8	6 357.8	13 394.4	513.1	2 855.0	95	98
1981 ASM	(NA)	(NA)	(NA)	147.4	2 954.8	96.3	173.8	1 653.8	6 944.1	6 356.5	13 268.1	526.3	2 787.2	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	152.7	2 788.6	101.2	187.2	1 607.9	6 508.2	6 080.8	12 283.0	517.1	2 822.5	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	145.0	2 423.5	100.1	187.6	1 463.5	5 559.9	5 480.8	10 677.1	370.4	2 299.2	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	130.6	2 009.4	90.9	167.2	1 215.6	4 747.7	4 140.6	8 833.9	254.0	1 644.2	(NA)	(NA)
1977 Census	209	264	154	124.4	1 818.0	87.1	164.2	1 125.9	4 192.0	3 858.6	7 858.3	217.3	1 503.3	94	97
1976 ASM	(NA)	(NA)	(NA)	105.2	1 433.0	74.0	134.1	893.1	3 156.1	2 768.0	5 889.7	157.3	1 138.8	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	118.5	1 478.8	80.9	147.7	897.6	2 766.0	2 608.0	5 492.1	166.6	1 139.6	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	144.7	1 560.8	102.4	183.2	964.5	3 127.4	2 821.4	5 880.4	201.7	1 378.4	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	140.3	1 480.3	100.4	191.4	937.1	2 896.9	2 310.9	5 025.3	213.8	1 145.6	(NA)	(NA)
1972 Census	158	203	110	134.4	1 323.0	94.7	176.4	821.8	2 650.1	1 970.3	4 524.7	169.2	856.1	91	99
1971 ASM	(NA)	(NA)	(NA)	139.8	1 292.5	98.1	185.7	785.1	2 501.5	1 754.5	4 235.8	216.2	782.5	(NA)	(NA)
1970 ASM	(NA)	(NA)	(NA)	142.0	1 231.3	101.6	198.8	781.9	2 378.3	1 759.9	4 059.7	118.0	744.7	(NA)	(NA)
1969 ASM	(NA)	(NA)	(NA)	126.6	1 061.2	90.8	178.9	682.0	2 059.2	1 399.8	3 409.6	159.6	662.9	(NA)	(NA)
1968 ASM	(NA)	(NA)	(NA)	117.0	891.6	83.6	158.7	566.1	1 702.0	2 843.5	2 843.5	105.4	549.4	(NA)	(NA)
1967 Census	82	106	63	115.4	827.9	83.2	158.8	534.4	1 536.7	1 082.7	2 591.2	110.4	536.4	88	96
INDUSTRY 3662, RADIO AND TV COMMUNICATION EQUIPMENT															
1982 Census	2 084	2 387	1 256	464.1	10 957.1	228.4	439.2	4 232.0	21 177.7	12 037.5	33 027.8	1 784.6	7 901.6	93	91
1981 ASM	(NA)	(NA)	(NA)	426.9	9 268.5	217.7	423.9	3 712.4	18 039.8	9 792.1	27 054.2	1 373.7	7 090.4	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	413.4	7 999.6	212.1	405.5	3 268.9	16 073.9	8 523.8	23 751.6	965.5	6 013.6	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	386.3	6 820.9	198.9	389.3	2 755.0	13 294.0	7 192.7	19 623.5	808.4	5 003.1	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	372.9	6 089.9	192.1	372.9	2 528.2	11 426.9	5 971.7	16 863.0	634.0	3 858.6	(NA)	(NA)
1977 Census	1 873	2 122	973	334.6	5 181.0	172.8	336.0	2 104.5	9 950.0	5 180.2	14 900.5	471.8	3 162.5	92	92
1976 ASM	(NA)	(NA'	(NA)	316.3	4 616.9	159.3	314.4	1 814.3	8 499.6	4 744.7	13 248.3	355.5	2 823.2	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	315.9	4 234.8	159.7	310.5	1 674.8	7 558.4	4 420.5	11 911.0	255.5	2 699.3	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	318.5	3 931.5	160.3	315.2	1 563.3	6 851.5	3 847.1	10 574.5	270.0	2 538.8	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	323.4	3 765.8	163.2	321.6	1 504.9	6 466.5	3 475.8	9 725.9	228.9	2 311.5	(NA)	(NA)
1972 Census	1 521	1 773	921	319.2	3 589.1	161.9	320.9	1 447.6	5 803.1	3 338.1	9 140.2	212.2	2 081.2	91	91
1971 ASM	(NA)	(NA)	(NA)	325.1	3 458.0	153.6	300.2	1 298.7	5 437.8	3 079.3	8 749.5	191.4	2 058.9	(NA)	(NA)
1970 ASM	(NA)	(NA)	(NA)	390.0	3 786.9	185.7	366.5	1 452.4	5 905.4	3 257.7	9 299.3	254.7	2 275.7	(NA)	(NA)
1969 ASM	(NA)	(NA)	(NA)	412.8	3 956.9	203.9	409.6	1 549.5	6 169.7	3 488.1	9 653.1	267.4	2 459.6	(NA)	(NA)
1968 ASM	(NA)	(NA)	(NA)	424.3	3 828.7	219.0	443.6	1 584.2	6 122.1	3 712.6	9 560.0	302.2	2 427.8	(NA)	(NA)
1967 Census	1 111	1 296	782	409.9	3 568.8	221.3	447.1	1 515.6	5 155.8	3 433.4	8 555.8	246.0	2 114.9	89	90

See footnotes at end of table.

Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years—Con.

[1]In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1967, see 1967 Census of Manufactures, vol. II, table 1 of the Industry chapter.

[2]For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

[3]Includes establishments with payroll at any time during year.

[4]Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Up to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown above and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown below:

Industries	End-of-1981 inventories (million dollars)	End-of-1982 inventories (million dollars)	1982 value added by manufacture (million dollars)
Industry 3651, Radio and TV receiving sets	1 013.8	865.3	2 023.1
Industry 3652, Phonograph records and prerecorded tape	186.1	183.4	1 189.4
Industry 3661, Telephone and telegraph apparatus	2 779.0	2 809.9	6 940.5
Industry 3662, Radio and TV communication equipment	7 559.2	7 734.7	21 163.5

See Inventories in appendixes for explanation of the difference between end-of-1981 inventory figure shown in table and corresponding figure shown in footnote.

[5]Estimate for new capital expenditures has associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
INDUSTRY 3651, RADIO AND TV RECEIVING SETS									
1982 Census	17 816	73	1 845	8.36	65	80	41 541	43	30.79
1981 ASM	17 135	74	1 865	7.97	64	79	43 038	40	31.35
1980 ASM	15 325	73	1 906	6.88	61	76	41 618	37	29.76
1979 ASM	13 826	75	1 883	6.43	61	76	37 414	37	26.60
1978 ASM	12 338	75	1 830	5.82	61	75	34 129	36	24.88
1977 Census	11 426	77	1 851	5.35	59	74	31 513	36	22.05
1976 ASM	10 983	75	1 864	5.04	59	75	29 232	38	20.84
1975 ASM	10 084	76	1 841	4.45	62	78	22 420	45	16.02
1974 ASM	8 371	79	1 801	4.02	64	79	20 743	40	14.66
1973 ASM	8 063	81	1 876	3.75	60	74	24 041	34	15.74
1972 Census	7 531	81	1 897	3.43	61	76	20 899	36	13.65
1971 ASM	7 139	78	1 909	3.27	61	77	17 102	42	11.49
1970 ASM	6 767	76	1 911	3.00	61	77	15 503	44	10.64
1969 ASM	6 204	80	1 923	2.72	63	79	15 023	41	9.72
1968 ASM	5 932	82	1 909	2.65	62	78	13 850	43	8.88
1967 Census	5 515	82	1 906	2.52	65	81	12 035	46	7.66
INDUSTRY 3652, PHONOGRAPH RECORDS AND PRERECORDED TAPE									
1982 Census	17 076	69	2 000	6.75	33	49	69 561	25	50.40
1981 ASM	16 011	72	1 984	6.52	36	52	62 921	25	43.75
1980 ASM	13 222	74	1 970	5.66	38	55	47 418	28	32.43
1979 ASM	12 039	76	2 026	5.41	40	61	36 516	33	23.73
1978 ASM	11 563	75	2 015	5.09	43	63	34 639	33	22.83
1977 Census	10 589	77	2 090	4.57	39	60	31 485	34	19.55
1976 ASM	9 431	78	1 979	4.08	40	63	25 072	38	16.27
1975 ASM	9 120	76	1 910	3.96	40	65	22 354	41	15.40
1974 ASM	7 701	76	1 906	3.50	41	67	17 863	43	12.39
1973 ASM	7 179	77	1 903	3.26	37	63	17 672	41	12.04
1972 Census	7 217	78	1 949	3.25	34	60	18 502	39	12.19
1971 ASM	6 856	78	1 993	3.03	38	64	16 824	41	10.81
1970 ASM	6 182	77	1 993	2.77	38	64	15 070	41	9.82
1969 ASM	5 971	79	2 050	2.55	37	62	15 046	40	9.24
1968 ASM	5 869	79	2 079	2.52	33	60	14 366	41	8.79
1967 Census	5 632	81	2 018	2.43	34	62	13 404	42	8.21
INDUSTRY 3661, TELEPHONE AND TELEGRAPH APPARATUS									
1982 Census	22 133	63	1 850	10.19	47	70	52 167	42	44.95
1981 ASM	20 046	65	1 805	9.52	48	70	47 111	43	39.95
1980 ASM	18 262	66	1 850	8.59	50	72	42 621	43	34.77
1979 ASM	16 714	69	1 874	7.80	51	74	38 344	44	29.64
1978 ASM	15 386	70	1 839	7.27	47	70	36 353	42	28.40
1977 Census	14 614	70	1 885	6.86	49	72	33 698	43	25.53
1976 ASM	13 622	70	1 812	6.66	47	71	30 001	45	23.54
1975 ASM	12 479	68	1 826	6.08	47	74	23 342	53	18.73
1974 ASM	10 786	71	1 789	5.26	48	75	21 613	50	17.07
1973 ASM	10 551	72	1 906	4.90	46	75	20 648	51	15.14
1972 Census	9 844	70	1 863	4.66	44	73	19 718	50	15.02
1971 ASM	9 245	70	1 893	4.23	41	72	17 893	52	13.47
1970 ASM	8 671	72	1 957	3.93	43	74	16 749	52	11.96
1969 ASM	8 382	72	1 970	3.81	41	72	16 265	52	11.51
1968 ASM	7 621	71	1 898	3.57	100	131	14 547	52	10.72
1967 Census	7 174	72	1 909	3.37	42	74	13 316	54	9.68

See footnotes at end of table.

Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
	INDUSTRY 3662, RADIO AND TV COMMUNICATION EQUIPMENT								
1982 Census	23 609	49	1 923	9.64	36	70	45 632	52	48.22
1981 ASM	21 711	51	1 947	8.76	36	70	42 260	51	42.56
1980 ASM	19 351	51	1 912	8.06	36	70	38 882	50	39.64
1979 ASM	17 657	51	1 957	7.08	37	71	34 414	51	34.15
1978 ASM	16 331	52	1 941	6.78	35	72	30 643	53	30.64
1977 Census	15 486	52	1 944	6.27	35	70	29 741	52	29.61
1976 ASM	14 597	50	1 974	5.77	36	71	26 872	54	27.03
1975 ASM	13 406	51	1 944	5.39	37	73	23 927	56	24.34
1974 ASM	12 344	50	1 966	4.96	36	74	21 512	57	21.74
1973 ASM	11 644	50	1 971	4.68	36	74	19 995	58	20.11
1972 Census	11 244	51	1 982	4.51	37	76	18 180	62	18.08
1971 ASM	10 637	47	1 954	4.33	35	75	16 727	64	18.11
1970 ASM	9 710	48	1 974	3.96	35	76	15 142	64	16.11
1969 ASM	9 586	49	2 009	3.78	36	77	14 946	64	15.06
1968 ASM	9 024	52	2 026	3.57	39	79	14 429	63	13.80
1967 Census	8 707	54	2 020	3.39	40	82	12 578	69	11.53

Note: For qualifications of data, see footnotes on table 1a.

Table 2. Industry Statistics for Selected States: 1982 and 1977

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982											1977	
		All establishments[2]		All employees		Production workers							
	E[1]	Total (no.)	With 20 employees or more (no.)	Number[3] (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)	Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees[3] (1,000)	Value added by manufacture (million dollars)
INDUSTRY 3651, RADIO AND TV RECEIVING SETS													
United States	-	458	182	48.4	862.3	35.4	65.3	546.2	2 010.6	3 967.2	6 063.9	140.9	74.6	2 351.8
Arkansas	-	8	6	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
California	-	108	35	5.9	88.7	4.0	7.9	46.4	202.1	415.7	627.5	34.7	7.1	181.1
Florida	E1	15	4	.2	3.3	.2	.4	2.2	6.2	7.5	13.9	.2	.4	6.8
Georgia	-	6	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Illinois	-	35	19	3.7	61.2	2.4	4.4	30.1	125.6	260.9	400.6	9.1	15.6	599.7
Indiana	-	13	8	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Kentucky	-	7	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Massachusetts	-	25	15	2.1	34.0	1.4	2.1	16.3	56.6	84.5	144.7	6.5	2.8	87.7
Michigan	-	16	4	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.4	20.9
Minnesota	E1	8	4	.2	2.0	.1	.2	1.2	3.3	6.2	9.6	.2	AA	(D)
Mississippi	-	3	3	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Missouri	-	5	2	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
New Jersey	-	19	6	1.8	17.3	1.5	2.9	10.6	49.6	81.8	126.8	1.8	1.5	27.7
New York	E2	48	19	1.4	18.1	1.0	1.8	10.1	33.0	35.1	68.1	1.1	3.6	92.4
North Carolina	-	5	2	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Ohio	E4	10	4	.2	3.3	.1	.2	1.7	5.0	7.8	11.6	.3	.5	6.7
Oklahoma	-	1	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Oregon	E1	11	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Pennsylvania	-	10	7	1.3	18.9	1.1	2.0	14.8	29.8	64.4	112.2	(D)	3.5	45.7
Tennessee	-	9	6	4.8	76.9	2.9	5.3	43.2	360.6	752.5	1 085.1	12.6	FF	(D)
Texas	-	26	11	1.8	22.9	1.4	2.6	13.5	73.8	103.8	177.1	4.4	2.5	63.2
Virginia	-	6	2	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Washington	-	9	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Wisconsin	-	2	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
INDUSTRY 3652, PHONOGRAPH RECORDS AND PRERECORDED TAPE														
United States	E1	574	131	17.1	292.0	11.8	23.6	159.4	1 189.5	578.8	1 768.9	36.4	23.1	727.3
California	E1	164	43	3.0	58.0	1.8	3.7	22.9	246.8	130.3	382.8	5.8	5.1	203.6
Florida	E1	22	4	.4	6.4	.3	.6	3.8	13.3	6.6	19.8	.5	.2	4.2
Georgia	-	11	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Illinois	E1	19	2	.7	9.8	.6	1.3	7.4	17.7	15.0	32.7	1.0	1.5	28.9
Indiana	-	7	5	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Iowa	-	4	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Michigan	-	12	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	5.2
New Jersey	-	32	19	1.9	30.9	1.4	2.7	18.7	266.2	53.2	316.6	3.1	3.3	63.1
New York	-	109	20	1.9	37.8	1.0	2.1	12.8	146.5	89.1	238.4	3.7	2.9	125.2
Pennsylvania	-	15	4	.8	12.9	.7	1.5	9.5	27.3	24.1	51.4	(D)	.6	9.7
Tennessee	E1	45	7	.5	6.3	.3	.5	3.1	13.7	9.6	23.6	.4	BB	(D)
Texas	-	15	4	.5	5.7	.4	.9	4.0	19.4	29.5	49.7	1.2	(NA)	(NA)
Virginia	-	5	1	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Washington	-	6	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982											1977	
		All establishments[2]		All employees		Production workers			Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees[3] (1,000)	Value added by manufacture (million dollars)
	E[1]	Total (no.)	With 20 employees or more (no.)	Number[3] (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
INDUSTRY 3661, TELEPHONE AND TELEGRAPH APPARATUS														
United States	-	333	210	136.5	3 021.2	85.6	158.4	1 614.5	7 120.8	6 357.8	13 394.4	513.1	124.4	4 192.0
Alabama	-	7	5	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Arkansas	-	1	1	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
California	-	68	42	13.3	270.5	6.0	11.7	89.9	646.8	365.1	1 012.3	41.0	9.1	266.7
Colorado	-	6	5	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Connecticut	E1	14	8	2.2	49.4	1.4	3.0	17.7	117.6	77.5	196.8	10.7	1.0	27.0
Florida	E1	18	12	7.3	168.6	3.9	7.0	48.6	332.0	242.2	564.2	58.9	1.3	22.4
Georgia	-	8	5	1.2	26.2	.8	1.4	10.2	52.4	119.6	173.6	3.6	BB	(D)
Illinois	-	32	23	23.5	559.9	13.9	24.7	277.7	1 303.3	1 257.5	2 558.8	91.4	29.0	970.2
Indiana	-	2	1	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Louisiana	-	1	1	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Maryland	-	4	3	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Massachusetts	-	9	7	12.4	338.3	8.4	18.2	209.9	816.5	656.9	1 465.6	46.4	FF	(D)
Minnesota	E2	4	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Mississippi	-	2	1	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Nebraska	-	4	2	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Nevada	-	3	1	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
New Jersey	-	21	12	7.6	194.5	5.2	9.1	123.4	391.9	220.4	619.2	13.9	FF	(D)
New Mexico	-	1	1	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
New York	E1	33	16	3.0	49.7	1.8	3.2	22.8	80.0	90.3	168.8	6.0	3.8	72.1
North Carolina	-	9	7	13.3	261.7	6.8	12.6	119.2	523.5	609.5	1 144.4	40.6	FF	(D)
Ohio	-	6	5	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Oklahoma	-	4	3	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Oregon	E8	5	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Pennsylvania	-	8	5	1.7	26.7	.6	1.2	8.7	74.8	51.2	114.3	3.4	.6	16.2
Rhode Island	-	1	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
South Carolina	-	1	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee	-	4	3	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Texas	-	20	15	6.4	131.4	4.0	6.8	63.7	418.5	341.5	748.7	25.2	FF	(D)
Virginia	E1	4	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Washington	-	13	9	1.3	24.0	.7	1.3	11.5	50.4	42.9	94.6	3.0	.7	13.9
Wisconsin	-	6	2	.2	2.9	.1	.1	.7	6.0	4.7	10.6	.7	.5	2.4
INDUSTRY 3662, RADIO AND TV COMMUNICATION EQUIPMENT														
United States	-	2 387	1 256	464.1	10 957.1	228.4	439.2	4 232.0	21 177.7	12 037.5	33 027.8	1 784.6	334.6	9 950.0
Alabama	-	14	8	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Arizona	-	31	18	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Arkansas	-	17	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
California	-	585	319	124.0	3 179.6	56.0	105.9	1 179.4	6 246.7	3 411.0	9 679.4	704.1	80.3	2 580.9
Colorado	-	46	19	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Connecticut	-	62	38	7.9	178.7	3.4	6.7	54.5	372.9	193.9	539.2	22.9	FF	(D)
Florida	-	126	71	31.0	680.4	14.3	28.6	225.7	1 379.1	758.7	2 119.5	120.6	19.7	637.2
Georgia	-	30	13	3.9	81.7	2.4	4.4	38.7	155.0	128.8	285.4	9.8	EE	(D)
Illinois	-	104	60	18.8	397.6	9.6	19.3	139.8	668.9	599.0	1 333.2	59.0	12.6	411.7
Indiana	-	27	15	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Iowa	-	9	5	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Kansas	-	23	8	2.9	45.3	1.9	3.9	22.7	79.5	42.4	119.8	5.9	EE	(D)
Kentucky	-	12	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Maine	-	7	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	9.1
Maryland	-	61	35	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Massachusetts	-	125	71	23.8	537.4	13.9	26.8	262.2	1 089.0	725.5	1 857.2	51.3	FF	(D)
Michigan	-	38	18	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.5	67.5
Minnesota	-	40	18	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Missouri	-	33	13	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Nebraska	-	12	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Nevada	E6	5	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
New Hampshire	-	19	11	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
New Jersey	-	143	81	25.3	665.7	15.4	29.4	367.3	1 137.7	781.4	1 906.7	65.9	FF	(D)
New Mexico	-	10	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
New York	-	214	113	48.1	1 195.7	20.3	39.3	380.3	2 316.8	1 033.3	3 206.5	151.7	37.8	1 185.2
North Carolina	E1	24	11	2.9	56.5	1.8	3.5	28.5	112.4	87.8	199.3	19.9	FF	(D)
Ohio	E1	75	30	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Oklahoma	-	21	11	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Oregon	-	31	13	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Pennsylvania	E1	83	48	8.9	170.6	4.9	10.0	74.7	327.1	225.5	558.0	17.4	6.6	172.7
Rhode Island	-	9	3	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
South Carolina	E1	12	5	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Tennessee	-	21	7	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	6.6
Texas	-	156	89	39.2	904.3	19.8	42.1	360.6	1 774.4	862.3	2 698.0	130.4	25.4	787.4
Utah	-	20	12	2.9	61.1	1.6	3.0	25.8	162.0	72.3	231.6	12.8	2.4	99.3
Virginia	-	37	23	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Washington	-	44	18	1.6	30.8	.8	1.4	11.2	59.1	37.9	96.3	27.9	2.0	52.1
Wisconsin	-	30	15	2.1	36.2	1.4	2.9	19.9	101.1	168.1	262.2	11.7	2.2	55.2

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

Note: For qualifications of data, see footnotes on table 1a.

[1]Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

[2]Includes establishments with payroll at any time during year.

[3]Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

[4]Beginning in 1982, all respondents were requested to report their inventories at cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, data for inventories and value added by manufacture are not comparable to prior-year data.

Table 3a. Summary Statistics for the Industry: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Radio and TV receiving sets (SIC 3651)	Phonograph records and prerecorded tape (SIC 3652)	Telephone and telegraph apparatus (SIC 3661)	Radio and TV communication equipment (SIC 3662)
Companies[1] ---- number	435	548	259	2 084
All establishments[2] ---- do.	458	574	333	2 387
With 1 to 19 employees ---- do.	276	443	123	1 131
With 20 to 99 employees ---- do.	115	98	85	714
With 100 employees or more ---- do.	67	33	125	542
All employees:				
Average for year ---- 1,000	48.4	17.1	136.5	464.1
Annual payroll[3] ---- mil. dol.	862.3	292.0	3 021.2	10 957.1
Production workers:				
Average for year ---- 1,000	35.4	11.8	85.6	228.4
March ---- do.	35.7	11.8	90.5	229.9
May ---- do.	34.9	12.2	89.2	229.7
August ---- do.	35.6	11.3	79.4	226.8
November ---- do.	35.6	11.8	83.2	227.2
Hours ---- millions	65.3	23.6	158.4	439.2
January to March ---- do.	16.0	5.8	41.5	110.6
April to June ---- do.	17.0	6.0	41.2	111.6
July to September ---- do.	15.9	5.7	37.2	107.9
October to December ---- do.	16.4	6.0	38.5	108.9
Wages ---- mil. dol.	546.2	159.4	1 614.5	4 232.0
Value added by manufacture[4] ---- do.	2 010.6	1 189.5	7 120.8	21 177.7
Cost of materials, etc.[5] ---- do.	3 967.2	578.8	6 357.8	12 037.5
Materials, parts, containers, etc., consumed ---- do.	3 647.5	457.9	5 638.8	10 742.9
Resales ---- do.	279.5	12.2	515.0	288.5
Fuels consumed[6] ---- do.	8.3	14.9	33.6	55.4
Purchased electric energy[7] ---- do.	28.5	14.5	69.4	283.4
Contract work ---- do.	3.4	79.2	101.1	667.2
Value of shipments, including resales ---- do.	6 063.9	1 768.9	13 394.4	33 027.8
Value of resales ---- do.	326.2	23.3	626.2	403.2
Manufacturers' inventories (see tables 3b and 3c)				
Capital expenditures for plant and equipment[8] ---- do.	143.9	38.4	532.5	1 896.9
New capital expenditures ---- do.	140.9	36.4	513.1	1 784.6
New buildings and other structures ---- do.	11.6	7.7	58.0	639.7
New machinery and equipment ---- do.	129.2	28.7	455.1	1 144.9
Used capital expenditures ---- do.	3.1	2.1	19.5	112.4
Primary product specialization ratio[9] ---- percent	90	99+	95	93
Coverage ratio[10] ---- do.	95	90	98	91

[1]For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.
[2]Includes establishments with payroll at any time during year.
[3]Data on supplemental labor costs are not included in annual payroll, but are shown in table 3d.
[4]Value added by manufacture is computed using inventory data reported on a cost or market basis prior to any adjustment to LIFO cost. See table 3b, footnote 1 for further explanation.
[5]Data on purchased services for the repair of buildings and machinery and for communication services are not included in cost of materials, etc., but are shown in table 3d.
[6]Data on purchased fuels by type were not collected for 1982. See MC82-S-4, Fuels and Electric Energy Consumed, for 1981 data on purchased fuels by type.
[7]Data on quantity of electric energy used for heat and power are included in table 3d.
[8]Data on capital expenditures for new machinery and equipment by type, depreciable assets, retirements, rental payments, and depreciation are included in table 3d.
[9]Represents ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for establishments classified in industry.
[10]Represents ratio of primary products shipped by establishments classified in industry to total shipments of such products by all manufacturing establishments, wherever classified.

Table 3b. Value of Inventories for the Industry: End of 1981 and 1982

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Radio and TV receiving sets (SIC 3651)		Phonograph records and prerecorded tape (SIC 3652)		Telephone and telegraph apparatus (SIC 3661)		Radio and TV communication equipment (SIC 3662)	
	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982
Total inventories[1]	**1 071.5**	**888.4**	**192.3**	**189.8**	**2 835.5**	**2 855.0**	**7 711.0**	**7 901.6**
Detail by method of valuation:								
Subject to LIFO costing[2]	296.7	259.7	(D)	(D)	(D)	(D)	817.8	787.3
LIFO reserve	42.7	26.2	(D)	(D)	(D)	(D)	182.1	196.8
LIFO value	254.0	233.5	(D)	(D)	(D)	(D)	635.7	590.5
Not subject to LIFO costing	691.4	554.7	131.1	128.0	2 437.0	2 447.2	6 254.0	6 475.7
Valuation method not reported[3]	82.6	73.1	(D)	(D)	(D)	(D)	632.6	631.9
Amount subject to LIFO reported without associated reserve and value[4]	.8	.9	.3	.7	.1	.1	6.7	6.8
Detail by stage of fabrication:								
Finished goods	345.9	350.6	114.5	114.2	398.7	412.0	915.0	867.0
Work in process	337.6	245.9	14.4	14.1	1 510.6	1 581.5	5 285.4	5 519.9
Materials and supplies	388.0	291.9	63.5	61.5	926.2	861.5	1 510.5	1 514.8

[1]Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (LIFO, FIFO, market, to name a few). In 1982, all respondents were requested to report inventories at cost or market. LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve. For further explanation, see inventories in appendixes.

[2]Only includes data reported by respondents who (a) indicated amount of inventories subject to LIFO cost, and (b) provided sufficient information to determine associated LIFO reserve and value figures.

[3]Includes data estimated for nonresponse and nonmail administrative records and data reported by respondents who provided total inventory figures without other information.

[4]Includes data reported by respondents who indicated their inventories were subject to LIFO cost, but did not provide associated LIFO reserve and value figures.

Table 3c. Inventories by Specific Method of Valuation for the Industry: End of 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Radio and TV receiving sets (SIC 3651)		Phonograph records and prerecorded tape (SIC 3652)		Telephone and telegraph apparatus (SIC 3661)		Radio and TV communication equipment (SIC 3662)	
	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)
Total inventories	**100.0**	**(X)**	**100.0**	**(X)**	**100.0**	**(X)**	**100.0**	**(X)**
Last-In, First-Out (LIFO) methods	29.2	(X)	(D)	(X)	(D)	(X)	10.0	(X)
Non-LIFO methods	62.4	(X)	67.5	(X)	85.7	(X)	82.1	(X)
Cost basis:								
First-In, First-Out (FIFO)	34.0	.7	13.6	3.0	57.0	.5	16.0	.4
Average cost	14.5	.3	4.0	.9	2.7	.2	11.9	.3
Specific or actual cost	5.5	.9	3.9	1.2	.6	(Z)	32.4	.6
Standard cost	8.1	.3	41.2	5.7	25.2	.4	15.6	.5
Other	.1	(Z)	(Z)	(Z)	(Z)	(Z)	3.1	.1
Market basis:								
Market lower than cost	.2	(Z)	4.8	1.0	(Z)	(Z)	1.2	.2
Market always used	(Z)	(Z)	(Z)	(Z)	.1	.1	1.8	.1
Valuation method not reported	8.2	(X)	(D)	(X)	(D)	(X)	.7.8	(X)
Amount subject to LIFO reported without associated reserve and value	.1	(X)	.4	(X)	(Z)	(X)	2.1	(X)

Note: The percentages shown for the LIFO and non-LIFO totals and the categories "valuation method not reported" and "amount subject to LIFO reported..." are based on the census universe estimates included in table 3b. The percentages shown for the specific non-LIFO methods of valuation (e.g., FIFO, etc.) are based on a representative sample of establishments included in the annual survey of manufactures (ASM) panel for 1982 (see appendixes for description of ASM). The absolute standard error of each of the ASM estimates is shown above.

Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Radio and TV receiving sets (SIC 3651)		Phonograph records and prerecorded tape (SIC 3652)		Telephone and telegraph apparatus (SIC 3661)		Radio and TV communication equipment (SIC 3662)	
	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)
Supplemental labor costs:								
Total	217.7	1	57.7	4	797.4	1	2 383.6	1
Legal costs	73.9	1	24.3	4	229.4	1	833.6	1
Voluntary costs	143.8	1	33.4	4	568.0	1	1 550.0	1
Purchased services:								
Cost of purchased services for the repair of—								
Buildings and other structures	1.4	2	2.6	31	22.4	2	73.2	3
Response coverage ratio (percent)[2]	71.0	(X)	75.2	(X)	81.6	(X)	80.3	(X)
Machinery	5.2	3	11.6	12	58.8	1	111.5	2
Response coverage ratio (percent)[2]	72.9	(X)	85.2	(X)	83.5	(X)	81.4	(X)
Cost of purchased communication services	9.6	2	7.2	25	58.1	2	192.0	3
Response coverage ratio (percent)[2]	76.8	(X)	84.4	(X)	87.1	(X)	77.9	(X)

See footnotes at end of table.

Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Radio and TV receiving sets (SIC 3651)		Phonograph records and prerecorded tape (SIC 3652)		Telephone and telegraph apparatus (SIC 3661)		Radio and TV communication equipment (SIC 3662)	
	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)
Electric energy used for heat and power:								
Purchased:								
Quantity (million kWh)	541.9	1	309.9	1	1 327.7	1	4 645.8	1
Cost	28.5	(X)	14.5	(X)	69.4	(X)	283.4	(X)
Generated less sold (million kWh)	(S)	1	-	1	127.5	1	(S)	1
Gross book value of depreciable assets:								
Total:								
Beginning of year	1 039.9	1	419.6	5	3 186.7	2	6 874.0	1
New capital expenditures	126.4	1	31.6	11	489.6	1	1 671.6	2
Used capital expenditures	1.6	22	.6	8	17.6	3	104.2	4
Retirements	78.2	1	27.6	13	212.2	3	301.6	4
End of year	1 089.7	1	424.1	4	3 481.7	2	8 348.3	1
Buildings and other structures:								
Beginning of year	283.2	2	146.4	6	853.6	3	2 329.4	2
New capital expenditures	7.8	6	7.5	9	52.9	3	607.7	1
Used capital expenditures	.1	1	.2	24	2.5	15	67.6	4
Retirements	12.3	2	6.7	18	15.1	5	80.3	6
End of year	278.9	2	147.4	6	894.0	2	2 924.4	1
Machinery and equipment:								
Beginning of year	756.7	1	273.2	5	2 333.1	2	4 544.7	2
New capital expenditures	118.6	1	24.0	14	436.7	1	1 063.9	2
Automobiles, trucks, etc., for highway use	4.2	1	.6	32	.9	12	10.6	7
Computers and peripheral data processing equipment	2.2	1	.7	12	29.5	3	157.2	3
All other	107.5	1	19.8	15	373.8	1	750.2	2
New machinery and equipment, n.s.k.[3]	4.7	8	2.9	19	32.5	9	145.9	6
Used capital expenditures	1.5	24	.4	4	15.1	2	36.6	7
Retirements	65.9	1	20.9	12	197.1	3	221.3	3
End of year	810.8	1	276.7	4	2 587.8	2	5 423.8	1
Rental payments:								
Total	30.2	2	18.5	10	98.5	3	337.6	2
Buildings and other structures	11.4	5	9.1	11	38.0	5	171.9	3
Machinery and equipment	18.9	2	9.3	15	60.5	3	165.7	1
Depreciation charges during 1982:								
Total	100.7	1	37.7	9	329.0	2	734.0	2
Buildings and other structures	12.8	2	10.9	28	37.0	2	142.5	2
Machinery and equipment	88.0	1	26.8	5	292.0	2	591.6	2

Note: Data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used expenditures are also shown in table 3a. Data in table 3a are census universe totals and may differ from annual survey of manufactures (ASM) sample estimates shown in this table. Data in this table represent best estimates of year-to-year change as measured by the continuing ASM sample. However, they are subject to sampling error and, hence, as estimates of level, are not as reliable as universe figures shown in table 3a.

[1]For description of relative standard error of estimate, see Qualifications of the Data in appendixes.
[2]Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to weighted total employment for all sample establishments classified in industry. (See appendixes for explanation of sample weight.)
[3]Represents total machinery and equipment expenditures for establishments that did not break down their expenditures by specific type.

Table 4. Industry Statistics by Employment Size of Establishment: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E[1]	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3651, RADIO AND TV RECEIVING SETS												
Total	-	458	48.4	862.3	35.4	65.3	546.2	2 010.6	3 967.2	6 063.9	140.9	888.4
Establishments with an average of—												
1 to 4 employees	E9	145	.2	2.9	.2	.3	2.0	6.4	11.5	18.0	.5	3.9
5 to 9 employees	E8	70	.5	6.3	.3	.6	3.9	13.9	22.5	36.7	.9	6.5
10 to 19 employees	E7	61	.8	11.3	.6	1.0	6.8	26.0	38.4	63.6	1.7	15.9
20 to 49 employees	E4	79	2.4	29.7	1.7	3.1	18.6	62.1	83.7	146.6	2.9	29.2
50 to 99 employees	E1	36	2.6	36.7	1.8	3.4	19.8	50.5	88.2	150.4	2.4	33.4
100 to 249 employees	-	38	6.1	89.6	4.1	7.8	51.3	163.7	280.5	479.9	7.2	108.5
250 to 499 employees	-	12	4.1	61.5	3.0	5.7	39.5	142.2	326.3	483.6	10.0	76.3
500 to 999 employees	-	8	5.7	84.9	4.4	7.5	47.6	211.4	313.0	531.5	15.7	66.9
1,000 to 2,499 employees	-	6	10.8	172.2	8.4	15.3	105.7	453.8	1 429.5	1 864.6	45.2	281.0
2,500 employees or more	-	3	15.3	367.3	11.0	20.6	251.1	880.7	1 373.7	2 289.1	54.3	266.7
Covered by administrative records[2]	E9	197	1.2	14.3	.9	1.6	9.3	32.3	56.7	88.9	2.6	20.6

See footnotes at end of table.

Table 4. Industry Statistics by Employment Size of Establishment: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E[1]	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3652, PHONOGRAPH RECORDS AND PRERECORDED TAPE												
Total	**E1**	**574**	**17.1**	**292.0**	**11.8**	**23.6**	**159.4**	**1 189.5**	**578.8**	**1 768.9**	**36.4**	**189.8**
Establishments with an average of—												
1 to 4 employees	E7	295	.6	8.0	.4	.8	4.9	30.9	15.8	47.2	.9	5.4
5 to 9 employees	E6	86	.6	7.6	.4	.8	4.6	26.2	13.5	39.9	1.1	4.3
10 to 19 employees	E5	62	.8	13.8	.6	1.1	7.4	39.8	28.5	68.7	1.8	8.6
20 to 49 employees	E3	79	2.4	35.9	1.6	3.2	17.6	88.9	67.6	156.6	4.0	20.2
50 to 99 employees	E3	19	1.3	15.8	.9	1.7	8.6	36.5	35.6	72.4	1.2	8.2
100 to 249 employees	E1	19	2.7	44.4	1.8	3.8	25.8	78.7	91.1	172.4	5.7	23.5
250 to 499 employees	-	7	2.2	52.0	1.0	2.2	13.3	318.3	140.8	462.6	5.8	52.7
500 to 999 employees	-	5	6.7	114.4	5.1	9.9	77.4	570.2	185.9	748.9	15.9	66.9
1,000 to 2,499 employees	-	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records[2]	E9	241	.6	7.5	.4	.9	4.8	27.4	14.8	42.4	.8	5.1
INDUSTRY 3661, TELEPHONE AND TELEGRAPH APPARATUS												
Total	**-**	**333**	**136.5**	**3 021.2**	**85.6**	**158.4**	**1 614.5**	**7 120.8**	**6 357.8**	**13 394.4**	**513.1**	**2 855.0**
Establishments with an average of—												
1 to 4 employees	E9	50	.1	1.6	.1	.1	1.0	4.2	3.6	7.8	.3	1.7
5 to 9 employees	E8	29	.2	3.8	.1	.3	2.2	9.9	9.2	19.1	.6	3.8
10 to 19 employees	E6	44	.6	11.4	.4	.9	6.4	23.7	21.5	45.4	1.9	9.9
20 to 49 employees	E4	52	1.7	29.8	1.1	2.1	15.9	62.2	59.3	122.0	4.7	27.8
50 to 99 employees	E1	33	2.3	40.3	1.6	2.9	23.2	99.2	78.6	173.9	6.9	40.3
100 to 249 employees	E1	39	6.5	119.6	3.5	6.5	45.4	229.6	181.4	411.0	15.8	106.6
250 to 499 employees	E1	31	10.6	186.8	6.2	12.3	80.9	452.2	343.5	780.8	38.0	196.3
500 to 999 employees	-	20	14.2	280.1	7.5	13.4	97.1	693.1	566.5	1 255.5	44.2	326.4
1,000 to 2,499 employees	-	18	100.3	2 347.8	65.1	119.8	1 342.3	5 546.8	5 094.3	10 578.9	400.6	2 142.2
2,500 employees or more	-	17	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records[2]	E9	86	.7	10.3	.4	.8	5.9	22.7	21.4	44.5	1.8	9.3
INDUSTRY 3662, RADIO AND TV COMMUNICATION EQUIPMENT												
Total	**-**	**2 387**	**464.1**	**10 957.1**	**228.4**	**439.2**	**4 232.0**	**21 177.7**	**12 037.5**	**33 027.8**	**1 784.6**	**7 901.6**
Establishments with an average of—												
1 to 4 employees	E8	551	1.0	16.9	.6	1.2	8.5	41.0	24.1	65.9	3.3	17.1
5 to 9 employees	E7	258	1.8	29.5	1.0	1.8	12.4	69.3	42.6	112.7	3.9	27.6
10 to 19 employees	E5	322	4.6	79.5	2.5	4.8	33.5	171.7	112.2	284.0	14.0	72.1
20 to 49 employees	E3	437	14.0	248.8	8.2	15.6	111.4	528.9	333.6	863.7	49.7	200.3
50 to 99 employees	E1	277	19.6	360.0	11.2	21.4	151.7	798.8	501.3	1 299.7	48.3	321.8
100 to 249 employees	E1	255	40.1	764.3	22.2	42.7	320.5	1 606.4	1 052.5	2 653.6	105.3	696.8
250 to 499 employees	E1	111	38.7	736.2	22.1	42.2	327.5	1 516.2	888.8	2 408.3	102.4	632.1
500 to 999 employees	-	69	51.0	1 129.2	26.1	51.0	457.3	2 244.7	1 415.5	3 607.1	152.9	925.6
1,000 to 2,499 employees	-	61	93.9	2 318.5	43.6	85.4	829.5	4 342.4	2 185.7	6 482.1	372.9	1 645.7
2,500 employees or more	-	46	199.4	5 274.2	90.9	173.1	1 979.9	9 858.2	5 481.3	15 250.7	931.9	3 362.4
Covered by administrative records[2]	E9	767	5.4	81.8	2.9	5.4	33.8	164.0	94.0	260.5	9.8	69.2

Note: For qualifications of data, see footnotes on table 1a. Data shown as a (D) are included in underscored figures above.

[1]Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

[2]Report forms were not mailed to small single-unit companies with up to 20 employees (cutoff varied by industry). Payroll and sales data for 1982 were obtained from administrative records supplied by other agencies of the Federal Government. Those data were then used in conjunction with industry averages to estimate the items shown. Data are also included in respective size classes shown.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3651	**Radio and TV receiving sets:**										
	Entire industry	458	48.4	862.3	35.4	65.3	546.2	2 010.6	3 967.2	6 063.9	140.9
	Establishments with 75 percent specialization or more	431	37.0	553.4	27.7	50.0	347.9	1 562.9	3 402.4	4 979.8	91.9
36511	Home, portable, and automobile radios:										
	Establishments with this product class primary	10	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Establishments with 75 percent specialization or more in class	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36512	Television receivers:										
	Establishments with this product class primary	18	19.5	317.3	14.6	26.3	204.8	1 123.5	2 843.5	3 941.9	66.0
	Establishments with 75 percent specialization or more in class	17	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982—Con.

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3651	**Radio and TV receiving sets—Con.**										
36514	Consumer high fidelity components:										
	Establishments with this product class primary	51	3.8	58.4	2.6	5.0	35.6	113.3	176.8	310.6	3.9
	Establishments with 75 percent specialization or more in class	45	2.7	36.5	2.0	3.5	21.8	54.4	93.9	170.2	2.4
36515	Speaker systems, microphones, etc.:										
	Establishments with this product class primary	105	12.4	171.3	9.4	16.9	100.8	339.0	374.1	729.9	20.6
	Establishments with 75 percent specialization or more in class	94	11.3	154.3	8.7	15.6	93.0	294.2	296.7	603.3	17.8
3652	**Phonograph records and prerecorded tape:**										
	Entire industry	574	17.1	292.0	11.8	23.6	159.4	1 189.5	578.8	1 768.9	36.4
	Establishments with 75 percent specialization or more	553	16.3	263.0	11.7	23.5	158.9	1 062.1	506.4	1 565.9	34.4
36521	Records, record blanks, prerecorded audio tapes, and video discs:										
	Establishments with this product class primary	128	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Establishments with 75 percent specialization or more in class	125	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36522	Magnetic tapes and discs with computer or word processor programs:										
	Establishments with this product class primary	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Establishments with 75 percent specialization or more in class	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3661	**Telephone and telegraph apparatus:**										
	Entire industry	333	136.5	3 021.2	85.6	158.4	1 614.5	7 120.8	6 357.8	13 394.4	513.1
	Establishments with 75 percent specialization or more	317	127.6	2 832.6	79.8	148.5	1 518.7	6 750.7	6 155.7	12 841.8	450.9
36611	Telephone switching and switchboard equipment:										
	Establishments with this product class primary	59	48.9	1 147.7	28.5	53.3	581.2	3 164.4	2 835.7	5 910.0	197.9
	Establishments with 75 percent specialization or more in class	49	39.6	902.1	21.6	40.8	406.4	2 637.9	2 573.9	5 118.2	170.6
36612	Telephone and telegraph (wire) apparatus:										
	Establishments with this product class primary	131	84.7	1 817.2	55.2	101.3	1 001.4	3 838.9	3 415.4	7 258.1	305.7
	Establishments with 75 percent specialization or more in class	117	77.8	1 684.4	51.1	94.6	958.4	3 614.8	3 280.0	6 903.1	(D)
3662	**Radio and TV communication equipment:**										
	Entire industry	2 387	464.1	10 957.1	228.4	439.2	4 232.0	21 177.7	12 037.5	33 027.8	1 784.6
	Establishments with 75 percent specialization or more	2 230	399.6	9 477.6	194.9	373.8	3 643.1	18 896.9	10 621.6	29 369.9	1 613.4
36621	Communication equipment, except broadcast:										
	Establishments with this product class primary	302	99.4	2 188.4	49.4	96.8	813.2	4 600.4	2 741.6	7 289.4	435.1
	Establishments with 75 percent specialization or more in class	234	62.4	1 324.2	31.1	62.6	489.6	3 003.1	1 759.8	4 762.1	305.1
36622	Broadcast, studio, and related equipment:										
	Establishments with this product class primary	126	22.8	448.0	11.5	22.3	163.8	764.1	840.0	1 635.0	52.4
	Establishments with 75 percent specialization or more in class	105	16.5	309.5	8.0	15.3	108.2	670.3	627.6	1 272.3	39.9
36624	Alarm systems:										
	Establishments with this product class primary	99	12.3	207.9	7.2	12.8	86.6	488.1	340.1	816.3	28.7
	Establishments with 75 percent specialization or more in class	86	9.8	160.1	5.7	10.1	64.7	397.8	272.0	656.0	23.1
36625	Search and detection, navigation, and guidance equipment:										
	Establishments with this product class primary	320	263.3	6 796.7	127.2	242.5	2 667.9	12 757.0	6 629.0	19 229.5	1 079.4
	Establishments with 75 percent specialization or more in class	246	191.0	4 981.7	90.5	174.2	1 933.5	9 635.6	4 929.9	14 475.3	675.5
36626	Traffic control equipment:										
	Establishments with this product class primary	35	6.5	138.8	3.3	6.6	54.6	279.3	156.2	436.0	11.2
	Establishments with 75 percent specialization or more in class	32	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36628	Intercommunication equipment:										
	Establishments with this product class primary	29	2.3	37.4	1.3	2.5	16.3	71.8	48.5	123.6	3.3
	Establishments with 75 percent specialization or more in class	21	1.8	29.5	1.0	1.9	12.6	60.2	33.3	96.1	2.0
36629	Electronic systems and equipment, n.e.c.:										
	Establishments with this product class primary	276	37.7	804.8	18.0	35.5	291.7	1 537.2	908.3	2 434.3	100.8
	Establishments with 75 percent specialization or more in class	229	25.6	540.4	12.0	23.7	196.4	1 048.7	676.8	1 702.1	59.3

Note: For qualifications of data, see footnotes on table 1a.

Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments, Specialization and Coverage Ratios for the Industry: 1982 and Earlier Census Years

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments			
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio Col. B÷ Col. B+C (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio Col. B÷ Col. F (percent)
		A	B	C	D	E	F	G	H	I
3651	Radio and television receiving sets 1982	6 063.9	5 144.9	586.2	332.8	90	5 415.1	5 144.9	270.2	95
	1977	5 732.6	4 621.3	319.5	791.8	94	4 730.8	4 621.3	109.6	98
	1972	4 440.1	3 560.2	168.5	711.4	95	3 609.7	3 560.2	49.5	99
3652	Phonograph records and prerecorded tape 1982	1 768.9	1 533.2	3.4	232.3	99+	1 695.0	1 533.2	161.8	90
	1977	1 181.7	1 134.5	9.9	37.3	99	1 138.7	1 134.5	4.2	99
	1972	567.7	533.4	10.8	23.5	98	537.3	533.4	3.9	99
3661	Telephone and telegraph apparatus 1982	13 394.4	11 596.7	617.3	1 180.4	95	11 886.9	11 596.7	290.2	98
	1977	7 858.3	6 910.6	430.2	517.5	94	7 118.7	6 910.6	208.1	97
	1972	4 524.7	3 922.3	334.5	267.9	91	3 973.9	3 922.3	51.6	99
3662	Radio and television communication equipment 1982	33 027.8	29 436.9	2 302.6	1 288.3	93	32 217.1	29 436.9	2 780.2	91
	1977	14 900.5	12 924.6	1 151.3	824.6	92	14 051.0	12 924.6	1 126.4	92
	1972	9 140.2	7 610.0	761.6	768.6	91	8 376.6	7 610.0	766.6	91

[1]Minimum percentage; exact percentage withheld to avoid disclosing data for individual companies.
[2]Relationships are not meaningful because of predominance of miscellaneous receipts, particularly receipts for contract and commission work on materials owned by others.

Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Radio and TV receiving sets (SIC 3651)	Phonograph records and prerecorded tape (SIC 3652)	Telephone and telegraph apparatus (SIC 3661)	Radio and TV communication equipment (SIC 3662)	Other industries
	Total	(X)	6 063.9	1 768.9	13 394.4	33 027.9	(X)
	Primary products	(X)	5 144.9	1 533.2	11 596.7	29 436.9	(X)
	Secondary products	(X)	586.2	3.4	617.3	2 302.6	(X)
	Miscellaneous receipts	(X)	332.8	232.3	1 180.4	1 288.3	(X)
3651-	**Radio and TV receiving sets**	5 415.1	5 144.9	-	(D)	(D)	203.3
36511	Home, portable, and automobile radios	783.4	673.8	-	-	(D)	(D)
36512	Television receivers	3 386.0	(D)	-	-	(D)	11.2
36514	Consumer high fidelity components	312.0	(D)	-	-	(D)	(D)
36515	Speaker systems, microphones, etc.	783.9	705.9	-	(D)	21.8	(D)
36510	Radio and TV receiving sets, n.s.k.	149.8	149.3	-	-	(D)	(D)
3652-	**Phonograph records and prerecorded tape**	1 695.0	-	1 533.2	-	(D)	(D)
36521	Records, record blanks, prerecorded audio tapes, and video discs	1 259.2	-	(D)	-	(D)	(D)
36522	Magnetic tapes and discs with computer or word processor programs	207.6	-	(D)	-	-	(D)
36520	Phonograph records and prerecorded tapes, n.s.k.	228.2	-	224.6	-	-	3.6
3661-	**Telephone and telegraph apparatus**	11 886.9	-	-	11 596.7	145.9	144.4
36611	Telephone switching and switchboard equipment	4 569.4	-	-	4 482.9	73.3	13.2
36612	Telephone and telegraph (wire) apparatus	7 078.9	-	-	(D)	(D)	131.2
36610	Telephone and telegraph apparatus, n.s.k.	238.6	-	-	(D)	(D)	-
3662-	**Radio and TV communication equipment**	32 217.1	(D)	-	(D)	29 436.9	(D)
36621	Communication equipment, except broadcast	6 995.7	(D)	-	215.1	6 293.4	(D)
36622	Broadcast, studio, and related equipment	1 591.4	(D)	-	(D)	1 493.6	(D)
36624	Alarm systems	827.9	(D)	-	(D)	737.6	(D)
36625	Search and detection, navigation, and guidance equipment	18 092.3	-	-	(D)	16 706.1	(D)
36626	Traffic control equipment	418.3	-	-	-	413.7	4.6
36628	Intercommunication equipment	163.8	-	-	(D)	(D)	28.0
36629	Electronic systems and equipment, n.e.c.	3 021.9	(D)	-	(D)	2 561.4	(D)
36620	Radio and TV commnication equipment, n.s.k.	1 105.7	-	-	-	(D)	(D)

See footnotes at end of table.

Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982—Con.

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Radio and TV receiving sets (SIC 3651)	Phonograph records and prerecorded tape (SIC 3652)	Telephone and telegraph apparatus (SIC 3661)	Radio and TV communication equipment (SIC 3662)	Other industries
	OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP						
2511-	Wood household furniture	(X)	(D)	-	-	-	(X)
2517-	Wood TV and radio cabinets	(X)	(D)	-	-	-	(X)
2732-	Book printing	(X)	-	-	-	(D)	(X)
2842-	Polishes and sanitation goods	(X)	-	-	-	(D)	(X)
3299-	Nonmetallic mineral products, n.e.c.	(X)	-	-	-	(D)	(X)
3351-	Copper rolling and drawing	(X)	-	-	(D)	-	(X)
3356-	Nonferrous rolling and drawing, n.e.c.	(X)	-	-	(D)	-	(X)
3357-	Nonferrous wire drawing and insulating	(X)	-	-	(D)	(D)	(X)
3423-	Hand and edge tools, n.e.c.	(X)	-	-	(D)	(D)	(X)
3441-	Fabricated structural metal	(X)	-	-	-	(D)	(X)
3443-	Fabricated plate work (boiler shops)	(X)	-	-	-	(D)	(X)
3444-	Sheet metal work	(X)	-	-	-	(D)	(X)
3448-	Prefabricated metal buildings	(X)	-	-	-	(D)	(X)
3489-	Ordnance and accessories, n.e.c.	(X)	-	-	-	117.8	(X)
3494-	Valves and pipe fittings	(X)	-	-	-	(D)	(X)
3536-	Hoists, cranes, and monorails	(X)	-	-	-	(D)	(X)
3537-	Industrial trucks and tractors	(X)	-	-	-	5.6	(X)
3545-	Machine tool accessories	(X)	-	-	-	(D)	(X)
3559-	Special industry machinery, n.e.c.	(X)	(D)	-	(D)	(D)	(X)
3566-	Speed changers, drives, and gears	(X)	-	-	-	(D)	(X)
3569-	General industrial machinery, n.e.c.	(X)	-	-	-	(D)	(X)
3573-	Electronic computing equipment	(X)	-	-	(D)	283.2	(X)
3574-	Calculating and accounting machines	(X)	(D)	-	-	(D)	(X)
3579-	Office machines, n.e.c., and typewriters	(X)	-	-	-	(D)	(X)
3621-	Motors and generators	(X)	-	-	(D)	(D)	(X)
3622-	Industrial controls	(X)	-	-	(D)	30.4	(X)
3631-	Household cooking equipment	(X)	165.7	-	-	-	(X)
3643-	Current-carrying wiring devices	(X)	(D)	-	(D)	16.7	(X)
3644-	Noncurrent-carrying wiring devices	(X)	-	-	(D)	(D)	(X)
3646-	Commercial lighting fixtures	(X)	-	-	-	(D)	(X)
3647-	Vehicular lighting equipment	(X)	-	-	-	(D)	(X)
3671-	Electron tubes	(X)	-	-	-	17.1	(X)
3674-	Semiconductors and related devices	(X)	(D)	-	(D)	98.0	(X)
3675-	Electronic capacitors	(X)	-	-	(D)	(D)	(X)
3676-	Electronic resistors	(X)	-	-	(D)	(D)	(X)
3677-	Electronic coils and transformers	(X)	(D)	-	(D)	20.6	(X)
3678-	Electronic connectors	(X)	-	-	-	14.0	(X)
3679-	Electronic components, n.e.c.	(X)	(D)	(D)	27.7	406.0	(X)
3693-	X-ray and electromedical apparatus	(X)	-	-	-	9.6	(X)
3694-	Engine electrical equipment	(X)	-	-	-	(D)	(X)
3699-	Electrical equipment and supplies, n.e.c.	(X)	(D)	-	-	(D)	(X)
3714-	Motor vehicle parts and accessories	(X)	66.4	-	-	(D)	(X)
3724-	Aircraft engines and engine parts	(X)	-	-	-	(D)	(X)
3728-	Aircraft equipment, n.e.c.	(X)	-	-	-	(D)	(X)
3731-	Ship building and repairing	(X)	-	-	-	(D)	(X)
3761-	Guided missiles and space vehicles	(X)	-	-	-	(D)	(X)
3764-	Space propulsion units and parts	(X)	-	-	-	(D)	(X)
3769-	Space vehicle equipment, n.e.c.	(X)	-	-	-	(D)	(X)
3795-	Tanks and tank components	(X)	-	-	-	(D)	(X)
3811-	Engineering and scientific instruments	(X)	-	-	-	253.5	(X)
3822-	Environmental controls	(X)	(D)	-	(D)	-	(X)
3823-	Process control instruments	(X)	-	-	-	(D)	(X)
3824-	Fluid meters and counting devices	(X)	(D)	-	-	10.2	(X)
3825-	Instruments to measure electricity	(X)	(D)	-	34.2	148.9	(X)
3829-	Measuring and controlling devices, n.e.c.	(X)	-	-	(D)	(D)	(X)
3832-	Optical instruments and lenses	(X)	-	-	-	99.5	(X)
3873-	Watches, clocks, and watchcases	(X)	-	-	(D)	(D)	(X)
3931-	Musical instruments	(X)	10.7	-	-	-	(X)
3944-	Games, toys, and children's vehicles	(X)	(D)	(D)	-	(D)	(X)
3949-	Sporting and athletic goods, n.e.c.	(X)	-	(D)	-	(D)	(X)
3993-	Signs and advertising displays	(X)	-	-	-	(D)	(X)
3999-	Manufacturing industries, n.e.c.	(X)	(D)	-	-	(D)	(X)
	MISCELLANEOUS RECEIPTS						
93000 00	Receipts for work done for others on their materials	(X)	(D)	181.4	3.6	117.7	(X)
99980 00	Miscellaneous receipts, including receipts for repair work, sales of scrap and refuse, etc.	(X)	(X)	27.6	(X)	(X)	(X)
99980 13	Sales of scrap and refuse	(X)	1.7	(X)	(D)	1.6	(X)
99980 31	Receipts for installation or construction of products of the establishment	(X)	(X)	(X)	(X)	27.4	(X)
99980 41	Receipts for research and development work	(X)	(D)	(X)	(X)	396.2	(X)
99980 61	Receipts for repair work	(X)	(X)	(X)	(D)	89.1	(X)
99980 98	Other miscellaneous receipts, including receipts for repair work, etc.	(X)	4.6	(X)	413.2	253.2	(X)
99989 00	Sales of products bought and resold without further manufacture, processing, or assembly at establishment	(X)	326.2	23.3	626.2	403.2	(X)

Table 5c-2. Industry-Product Analysis—Other Industries With Shipments of Primary Products: 1982

[Million dollars. Table is a continuation of table 5c-1 and shows where products of industries in this chapter (referred to as primary products and listed in table 6a) are made. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column of table 5c-1. Specified "Other industries" are listed in this table if they account for more than $5 million of products primary to this chapter. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Other industries	Value
3651-	**RADIO AND TV RECEIVING SETS**	
	3679 Electronic components, n.e.c.	75.3
	3714 Motor vehicle parts and accessories	(D)
	3811 Engineering and scientific instruments	(D)
	3861 Photographic equipment and supplies	14.8
	3931 Musical instruments	10.5
	3944 Games, toys, and children's vehicles	(D)
3652-	**PHONOGRAPH RECORDS AND PRERECORDED TAPE**	
	3574 Calculating and accounting machines	(D)
	3944 Games, toys, and children's vehicles	(D)
	3999 Manufacturing industries, n.e.c.	(D)
3661-	**TELEPHONE AND TELEGRAPH APPARATUS**	
	3291 Abrasive products	(D)
	3357 Nonferrous wire drawing and insulating	(D)
	3573 Electronic computing equipment	12.2
	3679 Electronic components, n.e.c.	33.2
	3811 Engineering and scientific instruments	(D)
	3861 Photographic equipment and supplies	(D)
3662-	**RADIO AND TV COMMUNICATION EQUIPMENT**	
	3357 Nonferrous wire drawing and insulating	(D)
	3483 Ammunition, except for small arms, n.e.c.	(D)
	3535 Conveyors and conveying equipment	(D)
	3573 Electronic computing equipment	78.6
	3574 Calculating and accounting machines	(D)
	3579 Office machines, n.e.c., and typewriters	(D)
	3622 Industrial controls	11.5
	3634 Electric housewares and fans	(D)
	3671 Electron tubes, all types	149.5
	3674 Semiconductors and related devices	178.9
	3679 Electronic components, n.e.c.	283.6
	3693 X-ray, electromedical, and electrotherapeutic apparatus	(D)
	3699 Electrical equipment and supplies, n.e.c.	(D)
	3714 Motor vehicle parts and accessories	(D)
	3721 Aircraft	67.3
	3728 Aircraft equipment, n.e.c.	110.4
	3761 Guided missiles and space vehicles	579.7
	3764 Space propulsion units and parts	(D)
	3769 Space vehicle equipment, n.e.c.	(D)
	3811 Engineering and scientific instruments	162.8
	3823 Process control instruments	(D)
	3825 Instruments to measure electricity	61.1
	3829 Measuring and controlling devices, n.e.c.	(D)
	3832 Optical instruments and lenses	(D)
	3842 Surgical appliances and supplies	(D)
	3861 Photographic equipment and supplies	(D)

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO RECEIVERS, TELEVISION SETS, PHONOGRAPHS, SPEAKERS, AND RELATED EQUIPMENT						
3651- —	**Total**	(NA)	(X)	5 415.1	(NA)	(X)	4 730.8
36511 —	Home, portable, and automobile radios, and radio-phonograph-tape recorder combinations:						
36511 00	Home, portable, and automobile radios, and radio-phonograph-tape recorder combinations:						
	As reported in the census of manufactures	21	(X)	783.4	25	(X)	811.6
	As reported in the Current Industrial Report MA-36M, Radio Receivers and Television Sets, Phonographs and Record Players, Speakers, and Related Equipment	(NA)	(X)	786.2	(NA)	(X)	824.0
	Home radio receivers (except high-fidelity receivers, radio-phonograph combinations, and television receivers):						
	Electrically powered:						
	Table models (except clock):						
36511 01	AM — thousands	-	-	-	-	-	-
36511 02	AM-FM and FM — do.	(NA)	(D)	(D)	(NA)	(3)	(3)
	Clock models:						
36511 03	AM — do.	-	-	-	-	-	-
36511 05	AM-FM and FM — do.	-	-	-	(NA)	395.5	7.4
	Portable, battery operated:						
36511 21	AM — do.	-	-	-	-	-	-
36511 24	AM-FM and FM — do.	(NA)	(D)	(D)	(NA)	(3)	(3)
36511 25	Other home radios, including consoles — do.	-	-	-	(NA)	3465.8	315.4
	Radio-phonograph-tape recorder combinations:						
	Table and portable (excluding high fidelity compact systems):						
36511 11	Monaural — do.	(NA)	875.4	53.7	(NA)	1 051.0	101.2
36511 12	Stereo or quadraphonic — do.						
	Console model:						
36511 18	Monaural — do.	-	-	-	-	-	-
36511 19	Stereo or quadraphonic — do.	(NA)	194.1	39.4	(NA)	349.3	64.7
	Automobile radios:						
36511 31	AM — do.	(NA)	(D)	(D)	(NA)	3 540.6	97.3
36511 32	AM-FM — do.	(NA)	(D)	(D)	(NA)	1 604.0	95.6
36511 33	AM-FM stereo — do.	(NA)	(D)	(D)	(NA)	1 974.6	192.3
36511 34	AM-FM with tape player — do.	(NA)	2 636.1	391.3	(NA)	1 813.2	236.4
36511 36	Tape players, and other complete automotive audio components sold separately (except speakers) — do.	(NA)	340.5	13.9	(NA)	567.1	13.7

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO RECEIVERS, TELEVISION SETS, PHONOGRAPHS, SPEAKERS, AND RELATED EQUIPMENT—Con.						
36512 —	Television receivers, including television combinations:						
36512 00	Television receivers, including television-radio-phonograph-tape recorder combination models:						
	As reported in the census of manufactures	18	(X)	3 386.0	14	(X)	2 450.9
	As reported in the Current Industrial Report MA-36M, Radio Receivers and Television Sets, Phonographs and Record Players, Speakers, and Related Equipment	(NA)	(X)	3 324.0	(NA)	(X)	2 439.1
	Table and portable models:						
36512 11	Monochrome, 10 inches or less ---- thousands						
36512 12	Monochrome, over 10 through 17 inches ---- do						
36512 13	Monochrome, over 17 inches ---- do	(NA)	1 950.8	411.0	(NA)	2 235.5	377.6
36512 14	Color, 10 inches or less ---- do						
36512 15	Color, over 10 inches through 17 inches ---- do						
36512 16	Color, over 17 inches ---- do	(NA)	5 663.3	1 615.4	(NA)	3 239.0	969.9
	Console and consolette models:						
36512 03	Monochrome ---- do	(NA)	(D)	(D)	(NA)	2 502.5	1 063.9
36512 04	Color ---- do	(NA)	(D)	(D)			
	Television- radio-phonograph-tape recorder combination models:						
36512 05	Monochrome ---- do	(NA)	(D)	(D)	(NA)	42.9	27.7
36512 20	Color ---- do	(NA)	(D)	(D)			
36512 21	Color with video tape recorder ---- do	-	-	-	-	-	-
36514 —	Consumer high fidelity components:						
36514 00	Consumer high fidelity components, including audio and video recorders and players, stereo compact systems, tuners, amplifiers, receivers, television chassis, and other home-type audio equipment:						
	As reported in the census of manufactures	69	(X)	312.0	62	(X)	558.3
	As reported in the Current Industrial Report MA-36M, Radio Receivers and Television Sets, Phonographs and Record Players, Speakers, and Related Equipment	(NA)	(X)	335.9	(NA)	(X)	519.9
36514 01	Mechanical (acoustical) phonographs ---- thousands	(NA)	(D)	(D)	(NA)	(D)	[4]
36514 02	Phonographs (except mechanical): Coin operated (including remote speakers and controls) ---- do	(NA)	(D)	(D)	(NA)	41.2	46.3
	Portable, table and console (except hi-fi and compact and component systems):						
36514 11	Monophonic ---- do	(NA)	885.8	23.5	(NA)	2 175.9	66.5
36514 12	Stereophonic ---- do	(NA)	28.7	1.4			
36514 13	Stereo compact systems ---- do	(NA)	839.2	91.0	(NA)	1 594.1	179.1
	Consumer high-fidelity components:						
	Receivers (tuner-amplifier combinations):						
36514 71	Stereophonic ---- do	(NA)	(D)	(D)	(NA)	376.1	76.2
36514 72	Quadraphonic ---- do	-	-	-			
36514 73	Tuners (AM-FM and FM) ---- thousands	(NA)	3.2	1.1	(NA)	17.4	2.8
36514 74	Preamplifier-control units ---- do	(NA)	18.2	9.5	(NA)	36.9	10.7
	Power amplifiers:						
36514 75	Monophonic ---- do						
36514 76	Stereophonic ---- do	(NA)	70.7	26.8	(NA)	96.1	26.5
36514 77	Quadraphonic ---- do						
	Turntables (record players):						
36514 05	Automatic changer ---- do	(NA)	16.4	.9	(NA)	688.7	30.2
36514 06	Manual ---- do				(NA)	87.9	4.9
36514 07	Record changer mechanisms (sold OEM) ---- do	(NA)	(D)	(D)	(NA)	(D)	[4]
36514 08	Manual turntable mechanisms (sold OEM) ---- do	-	-	-	-	-	-
36514 09	Phonograph arms (sold separately) ---- do	(NA)	(D)	(D)	(NA)	(D)	[4]
	Consumer audio and video recorders and players (except radio-phonograph-TV-recorder combinations, office recording machines, and recorder mechanisms) and other home-type electronic equipment, sold separately:						
	Audio tape recorders and players, complete:						
36514 35	Reel-to-reel ---- do	(NA)	1.7	1.6	(NA)	[5]	[5]
36514 36	Cartridge ---- do				-	-	-
36514 37	Cassette ---- do	(NA)	108.2	15.2	(NA)	[5]202.9	[5]30.4
	Video recorders and players, complete:						
36514 41	Tape cartridge ---- do	-	-	-	-	-	-
36514 42	Disc ---- do	(NA)	(D)	(D)	-	-	-
36514 68	Other home-type electronic equipment converters, adapters, and sound processing equipment ---- do	(NA)	471.4	43.1	(NA)	(X)	[4]46.3
36514 86	TV chassis, for sale separately ---- do	(NA)	(D)	(D)	(NA)	(D)	[4]

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO RECEIVERS, TELEVISION SETS, PHONOGRAPHS, SPEAKERS, AND RELATED EQUIPMENT—Con.						
36515 —	Speaker systems, microphones, home type electronic kits, and commercial sound equipment, including public address systems:						
36515 00	Speakers, including loudspeaker systems and loudspeakers sold separately, microphones, home-type electronic kits, and commercial sound equipment, except broadcast, including public address systems:						
	As reported in the census of manufactures	123	(X)	783.9	114	(X)	753.9
	As reported in the Current Industrial Report MA-36M, Radio Receivers and Television Sets, Phonographs and Record Players, Speakers, and Related Equipment	(NA)	(X)	778.5	(NA)	(X)	736.9
	Loudspeaker systems (one speaker or more mounted in a single enclosure):						
36515 56	Bookshelf (designed to be supported on shelves or pieces of furniture) ---- thousands	(NA)	1 809.4	111.5	(NA)	1 594.6	120.5
36515 57	Floor standing (designed with or without base, can only be placed on floor because of weight or bulk restrictions) ---- do	(NA)	1 791.0	173.6	(NA)	2 071.0	168.5
36515 68	Other loudspeaker systems ---- do	(NA)	401.7	31.0	(NA)	337.2	49.8
36515 54	Loudspeakers sold separately, including radio, television, and automobile radio speakers ---- do	(NA)	35 361.9	271.0	(NA)	45 747.9	241.3
36515 55	Microphones (carbon, dynamic, and other) ---- do	(NA)	1 569.9	44.0	(NA)	3 151.8	60.8
36515 67	Home entertainment equipment kits (amplifiers, audio preamplifiers, audio tuners, and other, n.e.c.) ---- do						
36515 93	Music distribution systems (FM multiplex subscriber service) ---- do	(NA)	1 451.8	147.3	(NA)	1 011.3	96.0
36515 94	Public address systems ---- do						
36510 00	Radio receivers, television sets, phonographs, speakers, and related equipment, n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	61.0	(NA)	(X)	89.2
36510 02	Radio receivers, television sets, phonographs, speakers, and related equipment, n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	88.9	(NA)	(X)	66.9
	PHONOGRAPH RECORDS						
3652- —	**Total**	(NA)	(X)	1 695.0	(NA)	(X)	1 138.7
36521 —	Phonograph records, record blanks, and prerecorded audio tapes and video discs	(NA)	(X)	1 259.2	(NA)	(NA)	(NA)
36521 01	45 rpm—for own label ---- millions	13	[6]160.8	92.3	13	[6]108.9	*517.5
36521 02	45 rpm—on contract basis for others ---- do	24	*121.1	26.4	19	578.1	75.1
	Stereophonic and quadraphonic 33 1/3 rpm:						
36521 03	For own label ---- do	20	(S)	482.3	27	**387.2	282.6
36521 04	On contract basis for others ---- do	40					
36521 05	Other records, including 33 1/3 rpm monaural, all 78 rpm, etc., and electrical transcriptions of all speeds ---- do	3	167.7	130.3	26	302.6	126.3
	Audio tapes, prerecorded:						
	For own label:						
36521 11	Cartridge, 8-track ---- mil reels	6	[6]**6.8	4.9	19	[6]*187.4	164.8
36521 12	Cassette ---- do	27	117.0	333.7	17	**39.6	54.3
36521 13	Other (reel-to-reel, cartridge, 4-track, etc.) ---- do	4	(S)	5.2	2	(7)	(7)
	On contract basis for others:						
36521 14	Cartridge, 8-track ---- do	10	13.0	8.9	15	91.4	59.8
36521 15	Cassette ---- do	34	*97.1	67.5	20	**52.9	41.2
36521 16	Other (reel-to-reel, cartridge, 4-track, etc.) ---- do	6	(S)	4.5	4	76.7	711.3
36521 19	Record blanks (disc type and others) ---- thousands	1	(D)	(D)	2	(S)	(8)
36521 25	Video discs prerecorded for home entertainment ---- do	2	(D)	(D)	–	–	–
36521 26	Video tapes prerecorded for home entertainment ---- do	9	(D)	(D)	–	–	–
36521 00	Phonograph records, record blanks, and prerecorded audio tapes and video discs, n.s.k.	(NA)	(X)	(X)	(NA)	(NA)	(NA)
36522 —	Magnetic tapes and discs with prerecorded computer or word processor programs	(NA)	(X)	207.6	(NA)	(X)	(NA)
	Magnetic tapes and discs with prerecorded computer or word processor programs:						
36522 01	Discs ---- thousands	2	(D)	(D)	(X)	(X)	(9)
	Tapes:						
36522 02	Reel ---- mil reels	1	(D)	(D)	(X)	(X)	(9)
36522 03	Cassette and cartridge ---- do	6	(D)	(D)	(X)	(X)	(9)
36522 00	Magnetic tapes and discs with prerecorded computer or word processor programs, n.s.k.	(NA)	(X)	–	(NA)	(X)	–
36520 00	Phonograph records, n.s.k., typically for establishments with 5 employees or more (see note)	(NA)	(X)	185.8	(NA)	(X)	[8]187.3
36520 02	Phonograph records, n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	42.4	(NA)	(X)	27.1

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	TELEPHONE AND TELEGRAPH APPARATUS						
3661- —	**Total**	(NA)	(X)	11 886.9	(NA)	(X)	7 118.7
36611 —	Telephone switching and switchboard equipment:						
36611 00	Telephone switching and switchboard equipment:						
	As reported in the census of manufactures	63	(X)	4 569.4	34	(X)	2 827.1
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus	(NA)	(X)	4 447.8	34	(X)	2 820.6
	Private branch exchange equipment:						
	Common carrier:						
36611 21	Manual	(NA)					
	Automatic:						
36611 24	Electromechanical	(NA)	(X)	493.0	(NA)	(X)	315.8
36611 27	Electronic	(NA)					
	Private carrier:						
36611 31	Manual	(NA)	(X)	2.4			
	Automatic:				(NA)	(X)	12.5
36611 34	Electromechanical	(NA)	(X)	9.9			
36611 37	Electronic	(NA)	(X)	542.6	(NA)	(X)	42.5
	Telephone central office switching equipment:						
	Local switching:						
36611 61	Manual	(NA)	(X)	(10)			
36611 63	Electromechanical	(NA)	(X)	(10)			
36611 65	Electronic	(NA)	(X)	10847.2	(NA)	(X)	1 444.8
36611 67	Specialized switching including video, digital, and computer controlled	(NA)	(X)	782.5			
	Toll switching:						
36611 71	Manual	(NA)					
36611 73	Electromechanical	(NA)					
36611 75	Electronic	(NA)	(X)	329.1	(NA)	(X)	183.9
36611 77	Specialized switching including video, digital, and computer controlled	(NA)					
36611 79	Other telephone switching and switchboard equipment	(NA)	(X)	1 441.2	(NA)	(X)	821.1
36612 —	Telephone and telegraph (wire) apparatus, except switching and switchboard:						
36612 00	Telephone and telegraph (wire) apparatus, except switching and switchboard:						
	As reported in the census of manufactures	131	(X)	7 078.9	102	(X)	4 174.5
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus	(NA)	(X)	6 979.9	121	(X)	4 234.0
	Carrier line equipment:						
	Analog:						
36612 21	Hi-capacity	(NA)	(X)	103.0	(NA)	(X)	(11)
36612 22	Lo-capacity	(NA)			(NA)	(X)	(11)
	Digital:						
36612 23	Hi-capacity	(NA)	(X)	354.8	(NA)	(X)	239.0
36612 24	Lo-capacity	(NA)					
	Subscriber loop carrier (terminal and line equipment):						
36612 25	Digital	(NA)	(X)	347.3	(NA)	(X)	(11)
36612 26	Analog	(NA)			(NA)	(X)	11219.1
	Multiplex equipment:						
36612 30	Analog (chan. banks, group, supergroup, master group, etc.)	(NA)	(X)	758.4	(NA)	(X)	241.9
36612 32	Digital (chan. banks, muldems, etc.)	(NA)					
	Telephone sets:						
36612 33	Pushbutton type ---mil sets	(NA)	13.2	562.6	(NA)	11.5	341.3
36612 36	Dial type ---do	(NA)	3.3	100.4	(NA)	6.5	151.5
36612 39	Other, call directors, key sets, and special purposes ---do	(NA)	3.4	401.9	(NA)	3.0	181.1
	Teleprinters:						
36612 51	Up to 20 cps ---1,000 sets	(NA)	20.0	36.9	(NA)	(S)	73.3
36612 54	21 to 100 cps ---do	(NA)					
36612 57	101 to 200 cps ---do	(NA)	81.0	297.1	(NA)	(S)	177.4
36612 59	More than 200 cps ---do	(NA)					
36612 62	Tape senders and receivers ---do	(NA)			(NA)	(X)	(12)
36612 63	Alphanumeric display terminals based on CRT displays ---do	(NA)	561.0	71.8	(NA)	58.0	124.4
	Modems (data sets) including auxiliary set:						
36612 72	Up to 300 B/S ---do	(NA)	121.0	24.1	(NA)	118.0	34.1
36612 74	301 to 2000 B/S ---do	(NA)	340.0	137.3	(NA)	61.0	25.0
36612 76	2001 to 4800 B/S ---do	(NA)	141.0	281.6	(NA)	57.0	112.2
36612 78	More than 4800 B/S ---do	(NA)	167.0	212.5			
	Voice frequency equipment:						
36612 82	V.F. carrier telegraph	(NA)	(X)	6.8	(NA)	(X)	(12)
36612 84	Signaling	(NA)	(X)	58.7	(NA)	(X)	44.0
36612 86	Facility equipment, including repeaters and subscriber loop	(NA)	(X)	148.0	(NA)	(X)	102.0
36612 88	Telephone key systems	(NA)	(X)	108.4	(NA)	(X)	(12)
36612 91	Other telephone and telegraph equipment	(NA)	(X)	2 968.2	(NA)	(X)	122 167.7
36610 00	Telephone and telegraph apparatus, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	194.1	(NA)	(X)	94.9
36610 02	Telephone and telegraph apparatus, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	44.5	(NA)	(X)	22.3

See footnotes at end of table.

Table 6a. **Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977**—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO AND TV COMMUNICATION EQUIPMENT						
3662- --	**Total**	(NA)	(X)	32 217.1	(NA)	(X)	14 051.0
36621 —	Communication systems and equipment:						
36621 00	Communication systems and equipment (excluding broadcast), including microwave and mobile communications equipment:						
	As reported in the census of manufactures	351	(X)	6 995.7	349	(X)	3 344.4
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus	(NA)	(X)	6 854.0	(NA)	(X)	3 154.6
	Light communications systems and equipment, electronic:						
36621 13	Fiber optics system and equipment	(NA)	(X)	88.3	(NA)	(X)	55.6
36621 14	Other light communication systems and equipment	(NA)	(X)	106.8			
	Transmitters, receivers, RF power amplifiers, radio communications (point-to-point), except amateur and citizens radio:						
36621 01	Very low frequency and low frequency, below 300 KHZ	(NA)	(X)	47.7	(NA)	(X)	46.9
36621 02	Medium and high frequency, 300 KHZ to 30 MHZ	(NA)	(X)	203.5	(NA)	(X)	91.1
36621 03	VHF and UHF, to 890 MHZ	(NA)	(X)	529.5	(NA)	(X)	339.2
36621 04	Microwave 890 MHZ to 1850 MHZ	(NA)	(X)	10.8	(NA)	(X)	12.1
36621 05	Microwave 1850 MHZ to 3700 MHZ	(NA)	(X)	75.9	(NA)	(X)	38.5
36621 06	Microwave 3700 MHZ to 6425 MHZ	(NA)	(X)	122.8	(NA)	(X)	17.8
36621 07	Microwave 6425 MHZ to 7900 MHZ	(NA)	(X)	111.2			
36621 08	Microwave 7900 MHZ to 12.20 GHZ	(NA)					
36621 09	Microwave 13.25 GHZ to 19.60 GHZ	(NA)	(X)	189.0	(NA)	(X)	88.3
36621 10	Microwave 19.60 GHZ to 56.00 GHZ	(NA)					
	Carrier equipment and systems:						
36621 36	Voice channel multiplex for radio systems	(NA)	(X)	161.2	(NA)	(X)	46.5
36621 37	Power line carrier equipment	(NA)					
36621 40	Space satellite and sonar communications systems	(NA)	(X)	1 614.4	(NA)	(X)	311.2
36621 31	Telemetering systems and equipment , n.e.c., sold separately	(NA)	(X)	192.1	(NA)	(X)	177.0
	Mobile radio systems, sold as complete package; including tranceivers, power amplifiers, antennae, repeaters, transmitters, receivers, etc. (except amateur and citizens band radio):						
36621 50	Airborne and marine ---- thousands	(NA)	20 650.0	40.3	(NA)	(S)	63.8
36621 55	Ground ---- do	(NA)	154.7	177.3	(NA)	(S)	137.2
	Mobile base stations, transmit/receive package, except amateur and citizens band radio:						
36621 52	Air	(NA)					
36621 54	Marine	(NA)	(X)	216.0	(NA)	(S)	180.3
36621 56	Ground	(NA)					
	Mobile vehicular, transmit/receive package, except amateur and citizens band radio:						
36621 62	Airborne	(NA)	(X)	22.0	(NA)	(X)	31.9
36621 64	Marine	(NA)			(NA)	(X)	24.1
	Ground:						
36621 65	300 KHZ to 30 MHZ	(NA)					
36621 67	30.00 to 72.98 MHZ	(NA)					
36621 66	72.99 to 150.7 MHZ	(NA)	(X)	404.9	(NA)	(X)	258.0
36621 68	150.8 to 174.0 MHZ	(NA)					
36621 71	406.0 to 512.0 MHZ	(NA)					
36621 70	806 MHZ and higher frequencies	(NA)					
	Portable receivers, transceivers, and transmitter/receivers, except amateur and citizens band:						
36621 82	Portable, including pocket size ---- thousands	(NA)					
36621 84	Pager (one-way) ---- do	(NA)	2 009.0	510.2	(NA)	(S)	285.6
36621 86	Parts and subassemblies for mobile, portable, and base station radios	(NA)					
36621 88	Amateur radio communications equipment, fixed, mobile, and portable	(NA)	(X)	9.0	(NA)	(X)	54.4
	Citizens radio communication equipment:						
36621 21	CB transmitters, hand-held	(NA)					
	CB transceivers, a.c. only:						
36621 23	Single sideband	(NA)	(X)	.5	(NA)	(X)	55.8
36621 25	Other	(NA)					
	CB transceivers, d.c. and d.c./a.c.:						
36621 27	Single sideband	(NA)	(X)	3.0	(NA)	(X)	12.3
36621 29	Other	(NA)			(NA)	(X)	35.8
36621 53	Facsimile communications equipment	(NA)	(X)	185.5	(NA)	(X)	56.7
36621 92	Communications antennae, below 890 MHZ ---- thousands	(NA)	5 688.0	140.6	(NA)	(S)	124.0
36621 94	Microwave antennae, 890 MHZ and above (horns, parabolas, etc.) ---- do	(NA)	221.0	147.6	(NA)	(S)	33.3
36621 93	Electronic checkout, monitoring, evaluation, and other electronic support equipment for communications systems	(NA)	(X)	182.6	(NA)	(X)	66.0
36621 98	Other communications equipment, sold separately	(NA)	(X)	1 361.5	(NA)	(X)	511.2
36622 —	Broadcast, studio, and related electronic equipment:						
36622 00	Broadcast, studio, and related electronic equipment:						
	As reported in the census of manufactures	163	(X)	1 591.4	116	(X)	568.4
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus	(NA)	(X)	1 543.7	(NA)	(X)	560.3
	Audio equipment (excluding consumer and P.A. types):						
36622 12	Amplifiers and preamplifiers ---- thousands	(NA)	207.0	56.1	(NA)	167.2	25.1
36622 13	Control consoles and switchers ---- do	(NA)	7 715.0	19.9	(NA)	6 211.0	12.8
36622 17	Other (power supplies, terminal equipment, broadcast recorders, etc.)	(NA)	(X)	98.0	(NA)	(X)	54.8

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO AND TV COMMUNICATION EQUIPMENT—Con.						
36622 —	Broadcast, studio, and related electronic equipment —Con.						
36622 00	Broadcast, studio, and related electronic equipment —Con. As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus —Con.						
	Video equipment, excluding consumer and P.A. types:						
36622 22	Amplifiers ---------- thousands	(NA)	18 678.0	5.7	(NA)	7 357.0	4.5
36622 19	Televison cameras and telecine chains ---------- do	(NA)	1 632.0	41.8	(NA)	586.0	12.5
36622 29	Other (power supplies, synchronization equipment, terminal equipment monitors, video tape recorders, and parts and accessories thereof, live cameras, control consoles and switchers, film equipment, TV outside vans) ----------	(NA)	(X)	433.4	(NA)	(X)	205.8
	Transmitters, translators, RF power amplifiers, and related equipment:						
36622 31	AM and FM transmitters ----------	(NA)	(X)	48.2	(NA)	(X)	35.4
36622 34	TV transmitters ----------	(NA)	(X)	37.7	(NA)	(X)	16.5
36622 37	Other, including broadcast transmission line equipment, phasing equipment, TV boosters, and repeaters (translators), etc. ----------	(NA)	(X)	41.2	(NA)	(X)	21.4
36622 51	Studio transmission links (STL) and remote pickup equipment ----------	(NA)	(X)	18.6	(NA)	(X)	21.8
	Cable TV (master antenna, CATV and CCTV equipment) (excluding construction cost):						
36622 55	Head end equipment (antenna baluns; carrier generators, head end control units, single and broadband preamplifiers and strip amplifiers, converters, modulators and demodulators; splitting and mixing networks, FM processing equipment, filters and traps, power supplies, switches, etc.) ----------	(NA)	(X)	86.1	(NA)	(X)	16.3
36622 57	Subscriber equipment (decoders, converters, and switchers; wall outlet taps; distribution amplifiers; power suppliers; directional couplers, splitters, alternators, and equalizers) ----------	(NA)	(X)	373.3	(NA)	(X)	41.3
36622 30	Broadcasting transmitting antennae and community antennae systems ----------	(NA)	(X)	74.6	(NA)	(X)	27.3
36622 41	Closed circuit television systems and equipment (excluding broadcast and consumer products) (including specially designed cameras, monitors, video recorders, receivers, scan converters, control consoles, and others) ----------	(NA)	(X)	123.3	(NA)	(X)	32.3
36622 40	Other broadcast, studio, theatre, and commercial sound equipment, sold separately (excluding studio lighting equipment, radiating, and supporting towers) ----------	(NA)	(X)	85.9	(NA)	(X)	32.5
36624 —	Alarm systems:						
36624 00	Alarm systems (including intrusion and fire detection):						
	As reported in the census of manufactures ----------	133	(X)	827.9	(NA)	(X)	([12])
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus ----------	(NA)	(X)	833.5	(NA)	(X)	458.6
	Intrusion detection:						
36624 48	Local ----------	(NA)	(X)	270.8	(NA)	(X)	101.1
36624 49	Central station ----------	(NA)	(X)	109.6	(NA)	(X)	24.7
36624 50	Direct connect ----------	(NA)	(X)	69.3	(NA)	(X)	46.3
36624 51	Hold-up systems, commercial and industrial ----------	(NA)	(X)	9.8	(NA)	(X)	15.9
	Fire detection and prevention:						
	Smoke and heat detection alarms:						
36624 53	Ionizaton chamber type ----------	(NA)	(X)	152.4	(NA)	(X)	149.5
36624 54	Other, including photo cell type ----------	(NA)	(X)	96.7	(NA)	(X)	63.1
36624 56	Central station ----------	(NA)	(X)	72.4	(NA)	(X)	51.2
36624 57	Direct connect ----------	(NA)	(X)	52.5	(NA)	(X)	6.8
36625 —	Search and detection, navigation, and guidance equipment:						
36625 00	Search and detection, navigation, and guidance equipment:						
	As reported in the census of manufactures ----------	355	(X)	18 092.3	226	(X)	7 428.1
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus ----------	(NA)	(X)	17 733.4	(NA)	(X)	7 425.5
36625 10	Light reconnaissance and surveillance electronic systems and equipment (infrared, ultra-violet, and visible light) ----------	(NA)	(X)	1 641.1	(NA)	(X)	403.8
	Radar systems and equipment:						
	Search, detection, and acquisition radar systems and equipment (BMEWS, airborne and other early warning radar, air traffic control radar, air defense and fighter control radar, ship radar, harbor control radar, meteorological radar, etc.):						
36625 42	Airborne and missile/space radar ----------	(NA)	(X)	934.5	(NA)	(X)	345.0
36625 44	Ship (marine) radar ----------	(NA)	(X)	820.5	(NA)	(X)	147.0
36625 46	Ground radar ----------	(NA)	(X)	686.5	(NA)	(X)	252.9
	Tracking radar systems and equipment (fire control, bombing, bombing-navigational radar, aircraft and missile tracking radar, etc.):						
36625 62	Airborne and missile/space radar ----------	(NA)	(X)	1 046.8	(NA)	(X)	440.5
36625 64	Ship (marine) radar ----------	(NA)	(X)	280.9	(NA)	(X)	127.2
36625 66	Ground radar ----------	(NA)	(X)	451.4	(NA)	(X)	213.4

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

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		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO AND TV COMMUNICATION EQUIPMENT—Con.						
36625 —	Search and detection, navigation, and guidance equipment —Con.						
36625 00	Search and detection, navigation, and guidance equipment —Con.						
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus —Con.						
	Radar systems and equipment —Con.						
	Instrumentation radar systems and equipment (altimeters, highway speed control radar, missile and space satellite tracking range radar, GCA and other precision approach radar, etc.):						
36625 70	Airborne, missile/space and ship (marine) radars	(NA)	(X)	10.6	(NA)	(X)	30.1
36625 76	Ground radar	(NA)	(X)	90.8	(NA)	(X)	49.2
36625 82	Electronic checkout, monitoring, evaluation, and other electronic support equipment for radar systems	(NA)	(X)	267.0	(NA)	(X)	151.2
	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing, guidance, hydrophones, mapping, sonabuoys, navigation, sonar fish finders, sonar range instrumentation, and other):						
36625 52	Surface ship applications (destroyers, destroyer escorts, etc.)	(NA)	(X)	396.5	(NA)	(X)	149.2
36625 53	Submarine applications	(NA)	(X)	547.7	(NA)	(X)	234.2
36625 55	Airborne	(NA)	(X)	211.3	(NA)	(X)	155.5
36625 58	Electronic checkout, monitoring, evaluation, and other electronic support equipment for sonar systems and submerged fixed systems	(NA)	(X)	259.7	(NA)	(X)	100.0
36625 91	Specialized command and control data processing and display equipment sold separately from complete systems	(NA)	(X)	399.5	(NA)	(X)	294.5
36625 98	Search, detection, identification, and tracking systems and equipment, n.e.c.	(NA)	(X)	1 047.8	(NA)	(X)	385.8
	Navigation systems and equipment (NAV AIDS) for aircraft, ship, and ground navigation (autopilots, beacons, transponders, collision warning devices, DECCA, DME, ILS, Doppler navigation systems, inertial navigation systems, optical/laser LORAN, radio compasses and direction finders, SHORAN, TACAN, VOR, VORTAC equipment, etc.):						
	Airborne navigation systems:						
36625 83	Radio navigation receivers and displays (including omni, radio magnetic, glide slope/localizer, DME, etc.)	(NA)	(X)	183.1	(NA)	(X)	165.1
36625 84	Airborne integrated data systems/flight recorders	(NA)	(X)	95.1	(NA)	(X)	[14]
36625 85	Distance measuring equipment (DME)	(NA)	(X)	53.9	(NA)	(X)	11.8
36625 86	Flight directors/situation display	(NA)	(X)	124.8	(NA)	(X)	10.8
36625 87	Heads-up display (HUD) systems	(NA)	(X)	121.0	(NA)	(X)	[14]
36625 88	Inertial navigation systems	(NA)	(X)	417.8	(NA)	(X)	[14]
36625 89	Proximity warning/collision avoidance equipment	(NA)	(X)	292.5	(NA)	(X)	[14]
36625 90	Complete automatic pilots (both gyroscopic and nongyroscopic)	(NA)			(NA)	(X)	76.2
36625 92	Other airborne navigational systems	(NA)	(X)	329.5	(NA)	(X)	[14]510.2
36625 16	Surface (ship and ground) navigational systems	(NA)	(X)	390.6	(NA)	(X)	187.0
36625 17	Underwater navigational systems	(NA)	(X)	168.3			
36625 18	Electronic checkout, monitoring, evaluation, and other electronic support equipment for navigational systems and equipment	(NA)	(X)	512.5	(NA)	(X)	242.9
36625 22	IFF equipment	(NA)	(X)	94.0	(NA)	(X)	87.4
36625 32	Proximity fuses	(NA)	(X)	154.4	(NA)	(X)	42.9
36625 51	Meteorological electronics equipment and radio astronomy equipment (automatic weather stations and weather tracking equipment, ceilometers, transitometers, space satellite meteorological systems, and specialized meteorological telemetering equipment)	(NA)	(X)	67.6	(NA)	(X)	23.3
36625 59	Geophysical electronic equipment (exploration and other specialized geophysical equipment)	(NA)	(X)	351.6	(NA)	(X)	101.5
	Electronic warfare systems and equipment:						
	Countermeasures equipment:						
36625 11	Jamming equipment, communications, and radar	(NA)	(X)	830.7	(NA)	(X)	280.2
36625 13	Underwater countermeasure equipment	(NA)	(X)	144.6			
36625 15	Other active countermeasure equipment (excluding passive materials such as chaff, window, needles, rope, etc.)	(NA)	(X)	308.2	(NA)	(X)	223.0
36625 41	Specialized electronic and communication intelligence equipment	(NA)	(X)	1 345.9	(NA)	(X)	519.1

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

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		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO AND TV COMMUNICATION EQUIPMENT—Con.						
36625 —	Search and detection, navigation, and guidance equipment—Con.						
36625 00	Search and detection, navigation, and guidance equipment—Con.						
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus—Con.						
	Missile and space vehicle systems and equipment (beam riders, command guidance, inertial systems, infrared homing systems, radar systems, stellar trackers, television systems, combination systems, etc.):						
36625 12	Missile-borne and space-vehicle-borne equipment	(NA)	(X)	1 867.2	(NA)	(X)	1 080.4
36625 08	Nonmissile and space vehicle guidance equipment (ground, ship, or airborne command guidance systems, etc.)	(NA)	(X)	394.6	(NA)	(X)	214.3
36625 14	Electronic checkout, launching, and other missile and space vehicle support systems (ground, ship, and air)	(NA)	(X)	392.5	(NA)	(X)	169.9
36626 —	Vehicular and pedestrian traffic control equipment; electric railway signals and attachments:						
36626 00	Vehicular and pedestrian traffic control equipment; electric railway signals and attachments:						
	As reported in the census of manufactures	39	(X)	418.3	(NA)	(X)	(12)
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus	(NA)	(X)	413.1	(NA)	(X)	264.2
36626 42	Signal heads, including parts and accessories	(NA)	(X)	33.1	(NA)	(X)	21.9
36626 43	Electronic and electro-mechanical controllers, detectors, and sensors, including parts and accessories	(NA)	(X)	118.0	(NA)	(X)	75.0
	Railway signals and attachments, electric:						
36626 21	Railway highway grade crossing signals (exclusive of relays and other control apparatus)	(NA)	(X)	261.9	(NA)	(X)	89.7
36626 29	Other railway signal systems and safety control equipment	(NA)			(NA)	(X)	77.6
36628 —	Intercommunication equipment, except telephone and telegraph:						
36628 00	Intercommunication equipment, except telephone and telegraph:						
	As reported in the census of manufactures	49	(X)	163.8	(NA)	(X)	12851.9
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus	(NA)	(X)	162.5	(NA)	(X)	124.6
	Intercommunications systems, including inductive paging systems (selective calling):						
36628 12	Wired	(NA)	(X)	114.7	(NA)	(X)	90.3
36628 13	Nonwired	(NA)	(X)	47.7	(NA)	(X)	34.3
36628 14	AM/FM home radio intercom systems	(NA)					
36629 —	Electronic systems and equipment, n.e.c.:						
36629 00	Electronic systems and equipment, n.e.c.:						
	As reported in the census of manufactures	419	(X)	3 021.9	400	(X)	1 348.6
	As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus	(NA)	(X)	3 111.2	(NA)	(X)	1 189.5
36629 11	Electronic kits to be assembled by purchaser, except hi-fidelity component kits	(NA)	(X)	292.1	(NA)	(X)	(14)
	Ultrasonic equipment (except medical):						
36629 23	Cleaners, drills, welders, and solderers	(NA)	(X)	29.3	(NA)	(X)	54.0
36629 26	Other	(NA)	(X)	57.1			
	Amplifiers, except audio, RF power, and video, sold separately:						
36629 62	Magnetic and pulse	(NA)	(X)	8.9	(NA)	(X)	1.9
36629 63	Maser	(NA)	(X)	26.9	(NA)	(X)	–
36629 67	D.c.	(NA)			(NA)	(X)	18.1
36629 69	Other (differential, facsimile, etc.)	(NA)	(X)	19.3	(NA)	(X)	7.8
36629 72	Consumer electronic equipment, n.e.c.	(NA)	(X)	255.5	(NA)	(X)	252.4
36629 74	Scientific electronic equipment, n.e.c.	(NA)	(X)	211.2	(NA)	(X)	66.0
36629 76	Power supply portion of integrated TWT amplifier package	(NA)	(X)	44.0	(NA)	(X)	12.8
36629 77	Particle accelerator electronics equipment and subassemblies for betatrons, cyclotrons, synchrotrons, etc.; linear accelerators; dynamotrons, Vandergraff, traveling wave, etc.	(NA)	(X)	47.4	(NA)	(X)	23.3
36629 78	Electronic teaching machines and teaching aids	(NA)	(X)	87.2	(NA)	(X)	6.5
36629 81	Electronic trainers and simulators	(NA)	(X)	622.1	(NA)	(X)	232.9

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	RADIO AND TV COMMUNICATION EQUIPMENT—Con.						
36629 —	Electronic systems and equipment, n.e.c. —Con.						
36629 00	Electronic systems and equipment, n.e.c. —Con. As reported in the Current Industrial Report MA-36N, Selected Electronic and Associated Products, Including Telephone and Telegraph Apparatus —Con.						
	Laser systems and equipment, except communication:						
36629 83	Laser designator/ranging equipment	(NA)	(X)	286.4	(NA)	(X)	26.5
36629 84	Laser instrumentation (laboratory alignment devices, surveying equipment, etc.)	(NA)	(X)	82.4	(NA)	(X)	[16]
36629 85	Industrial laser equipment (welding, drilling, cutting, printing, wirephoto, etc.)	(NA)	(X)	75.5	(NA)	(X)	27.8
36629 87	Medical laser equipment	(NA)					
36629 88	Laser generator, power supplies, and other laser equipment and components, sold separately	(NA)	(X)	63.5	(NA)	(X)	[15]18.0
36629 97	Other electronic systems, equipment, and subassemblies, n.e.c.	(NA)	(X)	902.5	(NA)	(X)	[15]441.5
36620 00	Radio and TV communication equipment, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	845.2	(NA)	(X)	312.7
36620 02	Radio and TV communication equipment, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	260.5	(NA)	(X)	197.0

Note: In 1982 Census of Manufactures, data for establishments of small single-unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoff used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1982 and 1977 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

[1]Data reported by all producers, not just those with shipments of $100,000 or more.
[2]For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).
[3]For 1977, product codes 36511 02, 36511 24, and 36511 25 were combined to avoid disclosing data for indvidual companies.
[4]For 1977, product codes 36514 01, 36514 07, 36514 09, 36514 68, and 36514 86 were combined to avoid disclosing data for individual companies.
[5]For 1977, product code 35614 35 was included with 36514 37.
[6]Data for quantity of production for all purposes for product codes 36521 01 and 36521 11 are: 1982 (185.1 and 14.8) and 1977 (644.0 and 193.1). All other quantity of production figures are suppressed.
[7]For 1977, product codes 36521 13 and 36521 16 were combined to avoid disclosing data for individual companies.
[8]For 1977, product codes 36521 19 and 36520 00 were combined to avoid disclosing data for individual companies.
[9]These products were assumed to be minor for 1977. To the extent that they existed, their value was included in product code 36520 00.
[10]For 1982, product codes 36611 61, 36611 63, and 36611 65 are combined to avoid disclosing data for individual companies.
[11]For 1977, product codes 36612 21, 36612 22, 36612 25, and 36612 26 were combined to avoid disclosing data for individual companies.
[12]For 1977, product codes 36612 62, 36612 82, 36612 88, and 36612 91 were combined to avoid disclosing data for individual companies.
[13]For 1977, separate data were not available for product codes 36624 00, 36626 00, and 36628 00. The combined total is shown with product code 36628 00.
[14]For 1977, product codes 36625 84, 36625 87, 36625 88, 36625 89, and 36625 92 were combined to avoid disclosing data for individual companies.
[15]For 1977, product codes 36629 11 and 36629 97 were combined to avoid disclosing data for individual companies.
[16]For 1977, product codes 36629 84, 36629 87, and 36629 88 were combined to avoid disclosing data for individual companies.

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than $2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments
36512, TELEVISION RECEIVERS		
United States	**3 386.0**	**2 450.9**
Alabama	2.3	(NA)
California	383.9	(GG)
Tennessee	700.1	(GG)
36514, CONSUMER HIGH-FIDELITY COMPONENTS		
United States	**312.0**	**515.1**
California	45.6	95.6
Illinois	32.8	78.9
New York	29.6	105.7
36515, SPEAKER SYSTEMS, MICROPHONES, ETC.		
United States	**783.9**	**753.9**
Arkansas	15.1	(CC)
California	145.4	197.2
Illinois	114.6	111.8
Indiana	76.0	65.9
Massachusetts	80.7	85.4
Michigan	33.1	22.9
Minnesota	8.4	4.9
New York	13.4	23.4
Ohio	5.8	(CC)
Texas	20.6	(EE)
Wisconsin	9.4	(CC)
36521, RECORDS, RECORD BLANKS, PRERECORDED AUDIO TAPES, AND VIDEO DISCS		
United States	**1 259.2**	**(NA)**
California	249.3	(NA)
Connecticut	4.8	(NA)
Florida	10.1	(NA)
Minnesota	6.7	(NA)
New Jersey	288.1	(NA)
New York	39.7	(NA)
Tennessee	9.6	(NA)
Texas	4.8	(NA)
36522, MAGNETIC TAPES AND DISCS WITH COMPUTER OR WORD PROCESSOR PROGRAMS		
United States	**207.6**	**(NA)**
Washington	33.7	(NA)
36611, TELEPHONE SWITCHING AND SWITCHBOARD EQUIPMENT		
United States	**4 569.4**	**2 827.1**
California	481.3	105.5
Connecticut	27.3	(AA)
Florida	268.3	(FF)
Illinois	768.0	(GG)
New York	47.0	(GG)
Texas	586.5	(GG)
Washington	11.2	(AA)
36612, TELEPHONE AND TELEGRAPH (WIRE) APPARATUS		
United States	**7 078.9**	**4 174.5**
Arizona	2.7	(AA)
California	410.1	225.9
Colorado	6.3	(AA)
Connecticut	149.1	(FF)
Florida	118.6	8.9
Georgia	89.3	(CC)
Maryland	302.1	(GG)
New Jersey	342.6	(GG)
New York	110.4	44.9
Pennsylvania	44.7	50.4
Texas	198.2	131.8
Washington	71.4	27.2
36621, COMMUNICATION EQUIPMENT, EXCEPT BROADCAST		
United States	**6 995.7**	**3 344.4**
Arkansas	2.3	(BB)
California	1 642.8	473.1
Colorado	78.6	(EE)
Connecticut	86.3	28.9
Florida	1 162.6	584.3
Georgia	111.9	(FF)
Illinois	408.8	287.1
Indiana	310.7	164.4
Kansas	18.4	17.9
Maryland	298.9	141.7
Massachusetts	223.0	106.8
Missouri	121.8	(FF)
New Hampshire	8.5	10.5
New Jersey	317.8	93.9
New York	375.7	181.5
North Carolina	54.3	37.6
Ohio	90.6	101.2
Pennsylvania	149.5	75.9
Tennessee	12.2	(AA)
Texas	575.0	375.8
Virginia	261.5	(GG)
Washington	10.9	5.1
36622, BROADCAST, STUDIO, AND RELATED EQUIPMENT		
United States	**1 591.4**	**568.4**
Alabama	12.3	(BB)
California	352.2	136.4
Connecticut	27.4	(CC)
Florida	65.2	8.8
Illinois	147.1	64.8
Indiana	14.3	(AA)
Massachusetts	24.5	42.9
Minnesota	25.0	(CC)
New Jersey	109.8	(GG)
New York	123.1	40.8
Pennsylvania	127.7	34.6
Tennessee	6.1	5.5
Texas	39.3	(EE)
Utah	28.3	(CC)
Virginia	2.9	(AA)
Washington	9.4	(NA)
36624, ALARM SYSTEMS		
United States	**827.9**	**(NA)**
California	96.3	(NA)
Connecticut	19.4	(NA)
Illinois	132.1	(NA)
Maryland	30.0	(NA)
Massachusetts	100.9	(NA)
Minnesota	10.5	(NA)
Missouri	14.5	(NA)
New Jersey	112.5	(NA)
New York	117.5	(NA)
Ohio	50.2	(NA)
Texas	3.0	(NA)
Virginia	6.8	(NA)
36625, SEARCH AND DETECTION, NAVIGATION, AND GUIDANCE EQUIPMENT		
United States	**18 092.3**	**7 428.1**
Alabama	53.5	26.7
Arizona	336.1	168.1
Arkansas	5.5	(NA)
California	5 978.0	2 385.7
Colorado	444.0	70.6
Connecticut	253.9	25.7
Florida	852.3	219.3
Illinois	269.7	57.1
Maryland	1 195.0	574.3
Massachusetts	1 323.6	531.9
Michigan	92.3	(FF)
Missouri	345.6	182.2
New Jersey	1 019.1	472.5
New York	1 808.3	952.0
Ohio	45.2	31.1

See footnotes at end of table.

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977—Con.

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than $2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments
36625, SEARCH AND DETECTION, NAVIGATION, AND GUIDANCE EQUIPMENT—Con.		
Oklahoma	63.0	(CC)
Pennsylvania	82.1	57.4
Texas	1 682.2	570.9
Utah	186.9	97.6
Virginia	490.9	258.0
Washington	57.8	(FF)
36626, TRAFFIC CONTROL EQUIPMENT		
United States	**418.3**	**(NA)**
California	73.1	(NA)
Illinois	19.9	(NA)
36628, INTERCOMMUNICATION EQUIPMENT		
United States	**163.8**	**(NA)**
California	31.7	(NA)
Illinois	21.1	(NA)
Massachusetts	14.8	(NA)
New York	19.6	(NA)
36629, ELECTRONIC SYSTEMS AND EQUIPMENT, N.E.C.		
United States	**3 021.9**	**(NA)**
California	895.7	(NA)
Colorado	9.0	(NA)
Connecticut	87.0	(NA)
Florida	154.3	(NA)
Illinois	71.2	(NA)
Maryland	123.6	(NA)
Massachusetts	126.7	(NA)
Michigan	110.7	(NA)
Minnesota	25.5	(NA)
New Jersey	84.3	(NA)
New York	374.7	(NA)
Ohio	107.8	(NA)
Oklahoma	41.2	(NA)
Pennsylvania	143.2	(NA)
Texas	325.2	(NA)
Washington	37.2	(NA)
Wisconsin	10.5	(NA)

Note: For 1977, the following value ranges (in million dollars) substitute for actual figures withheld to avoid disclosing data for individual companies: AA—less than $2.0 but not 0; BB—$2.0 to $4.9; CC—$5.0 to $9.9; EE—$10.0 to $19.9; FF—$20.0 to $49.9; GG—$50.0 or more.

Table 6c. Product Classes—Value Shipped by All Producers: 1982 and Earlier Years

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Product class	1982	1981[1]	1980[1]	1979[1]	1978[1]	1977	1972	1967
3651-	**Radio and TV receiving sets**	**5 415.1**	**5 634.5**	**5 608.6**	**5 488.7**	**5 484.4**	**4 730.8**	**3 609.7**	**3 568.2**
36511	Home, portable, and automobile radios	783.4	745.3	761.1	919.7	915.8	811.6	754.5	697.4
36512	Television receivers	3 386.0	3 499.2	3 332.6	2 974.9	2 802.0	2 450.9	2 148.7	2 259.7
36514	Consumer high-fidelity components	312.0	425.7	569.3	615.3	745.5	558.3	373.4	396.1
36515	Speaker systems, microphones, etc.	783.9	800.2	804.0	851.9	909.4	753.9	249.2	184.8
36510	Radio and TV receiving sets, n.s.k.	149.8	164.0	141.6	126.9	(S)	156.1	83.9	30.2
3652-	**Phonograph records and prerecorded tape**	**1 695.0**	**1 463.5**	**1 400.4**	**1 100.2**	**1 486.1**	**1 138.7**	537.3	271.0
36521	Records, record blanks, prerecorded audio tapes, and video discs	1 259.2							
36522	Magnetic tapes and discs with computer or word processor programs	207.6	1 463.5	1 400.4	1 100.2	1 486.1	1 138.7	537.3	271.0
36520	Phonograph records and prerecorded tapes, n.s.k.	228.2							
3661-	**Telephone and telegraph apparatus**	**11 886.9**	**12 176.5**	**11 161.8**	**9 676.8**	**8 003.2**	**7 118.7**	**3 973.9**	**2 248.2**
36611	Telephone switching and switchboard equipment	4 569.4	4 440.8	4 268.2	3 729.0	3 162.8	2 827.1	1 568.1	840.4
36612	Telephone and telegraph (wire) apparatus	7 078.9	7 638.6	6 802.6	5 839.9	4 692.7	4 174.5	2 376.6	1 399.0
36610	Telephone and telegraph apparatus, n.s.k.	238.6	97.0	91.0	108.0	(S)	117.2	29.2	8.8
3662-	**Radio and TV communication equipment**	**32 217.1**	**26 709.6**	**23 116.1**	**18 582.0**	**16 073.6**	**14 051.0**	**8 376.6**	**7 482.2**
36621	Communication equipment, except broadcast	6 995.7	5 870.3	5 260.9	4 281.5	3 788.8	3 344.4	(NA)	(NA)
36622	Broadcast, studio, and related equipment	1 591.4	1 366.2	1 148.1	902.1	706.8	568.4	(NA)	(NA)
36624	Alarm systems	827.9	(2)	(2)	(2)	(2)	(2)	(NA)	(NA)
36625	Search and detection, navigation, and guidance equipment	18 092.3	14 668.5	12 557.9	9 857.5	8 313.3	7 428.1	(NA)	(NA)
36626	Traffic control equipment	418.3	(2)	(2)	(2)	(2)	(2)	(NA)	(NA)
36628	Intercommunication equipment	163.8	[2]1 410.8	[2]1 230.3	[2]1 114.0	[2]874.1	[2]851.9	336.2	231.0
36629	Electronic systems and equipment, n.e.c.	3 021.9	2 961.6	2 558.5	2 112.2	1 717.6	1 348.6	(NA)	(NA)
36620	Radio and TV commnication equipment, n.s.k.	1 105.7	432.2	360.4	314.7	(S)	509.7	(NA)	196.9

[1]Figures are estimates derived from a representative sample of manufacturing establishments canvassed in annual survey of manufactures and, therefore, may differ from results that would be obtained from a complete canvass of all manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures volumes for this period.
[2]Before 1982 separate data were not available for product classes 36624, 36626, and 36628. The combined total is shown with product class 36628.

Table 7. Materials Consumed by Kind: 1982 and 1977

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982 Quantity[1]	1982 Delivered cost (million dollars)	1977 Quantity[1]	1977 Delivered cost (million dollars)
	INDUSTRY 3651, RADIO AND TV RECEIVING SETS				
	Materials, parts, containers, and supplies	(X)	3 647.5	(X)	2 861.4
	Mill shapes and forms, except castings and forgings:				
	Carbon steel:				
331012	Sheet and strip, 1,000 s tons	*23.7	23.5	**31.3	9.3
331011	Bars and bar shapes, do	(S)	5.7	3.0	2.4
331067	All other carbon steel mill shapes and forms, do			(S)	1.6
331020	Alloy steel, except stainless, do	(D)	(4)	(3)	(3)
	Stainless steel:				
331033	Sheet and strip, do	(D)	(4)	(3)	(3)
331050	All other stainless steel mill shapes and forms, do	(D)	(4)	37.9	35.5
	Insulated wire and cable, except magnet wire:				
335792	Copper (quantity of copper content), mil lb	(S)	6.1	(S)	15.1
335793	Aluminum (quantity of aluminum content), do			.5	.1
335770	Magnet wire, do	**1.4	2.2	(S)	4.4
335728	Bare wire copper and copper-base alloy for electrical conduction, do	(S)	.3	*.8	1.4
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil, do	(D)	(4)	3.6	3.2
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc., do	(D)	(4)	10.6	3.1
335008	All other aluminum mill shapes and forms, do	(D)	(4)	**.4	.4
336100	Aluminum and aluminum-base alloy castings (rough and semifinished):				
	Purchased, do	(S)	4.0	*1.8	2.7
	Produced and consumed, do	–	(X)	(S)	(X)
339913	Ferrite (powders and paste)	(X)	(4)	(X)	8.4
345001	Bolts, nuts, screws, washers, rivets, and screw machine products	(X)	17.6	(X)	15.4
346901	Metal stampings, 1,000 s tons	(S)	59.9	(X)	45.5
	Fractional horsepower electric motors (less than 1 hp):				
362110	Timing motors, synchronous and subsynchronous (less than 1 hp):				
	Purchased, millions	(S)	4.3	.9	7.2
	Produced and consumed, do	–	(X)	(S)	(X)
362115	Other fractional horsepower electric motors, excluding timing motors:				
	Purchased, do	(S)	2.1	*1.1	7.9
	Produced and consumed, do	(Z)	(X)	(S)	(X)
364300	Current-carrying wiring devices	(X)	51.6	(X)	59.8
364401	Noncurrent-carrying wiring devices, including boxes and covers, insulating bushings, nipples, and jacks	(X)	4.2	(X)	10.9
365141	Tuners	(X)	127.6	(X)	149.8
365151	Speaker systems and speakers sold separately	(X)	139.2	(X)	133.6
367012	Electron tubes, except X-ray and cathode ray picture tubes:				
	Purchased, millions	(D)	(4)	4.5	3.8
	Produced and consumed, do	–	(X)	(S)	(X)
367200	Cathode ray picture tubes:				
	Purchased, thousands	*5 770.9	544.9	*7 700.0	399.7
	Produced and consumed, do	(S)	(X)	(S)	(X)
367400	Transistors, diodes, and rectifiers:				
	Purchased, millions	**746.6	101.2	(S)	39.0
	Produced and consumed, do	(S)	(X)	(S)	(X)
367411	Integrated circuits	(X)	55.9	(X)	43.0
367501	Capacitors for electronic circuitry	(X)	130.0	(X)	65.3
367601	Resistors for electronic circuitry	(X)	46.9	(X)	43.4
367900	Other electronic components and accessories, n.e.c., including phonograph needles, and cutting styli	(X)	410.5	(X)	140.7
251011	Cabinets (wood, metal, and plastics), thousands	**11 015.5	247.2	(S)	224.2
260091	Paper and paperboard containers, including shipping sacks and other packaging supplies	(X)	36.6	(X)	40.3
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes, mil lb	(D)	(4)	15.7	10.4
307903	Plastics products consumed in the form of sheets, rods, tubes, and other shapes	(X)	25.9	(X)	22.7
970099	All other materials and components, parts, containers, and supplies	(X)	4893.5	(X)	3969.9
971000	Materials, parts, containers, and supplies, n.s.k.[2]	(X)	706.6	(X)	371.3
	INDUSTRY 3652, PHONOGRAPH RECORDS AND PRERECORDED TAPE				
	Materials, parts, containers, and supplies	(X)	457.9	(X)	340.1
260001	Paper and paperboard products (including album covers, sleeves, etc.)	(X)	61.7	(X)	61.7
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes, mil lb	(S)	74.1	*216.5	75.2
307903	Plastics products consumed in the form of sheets, rods, tubes, and other shapes	(X)	6.1	(X)	6.6
307952	Empty tape casettes and cartridges, millions	(S)	34.2	*274.0	29.6
365201	Record blanks, do	(D)	(D)	**27.4	10.5
367902	Electronic cutting styli	(D)	(D)	(X)	(5)
367904	Unrecorded audio-range magnetic tape, with or without cassettes or cartridges, millions	(S)	40.7	(X)	40.4
970099	All other materials and components, parts, containers, and supplies	(X)	70.0	(X)	528.0
971000	Materials, parts, containers, and supplies, n.s.k.[2]	(X)	128.4	(X)	88.1

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1982 and 1977—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material		1982		1977	
			Quantity[1]	Delivered cost (million dollars)	Quantity[1]	Delivered cost (million dollars)
	INDUSTRY 3661, TELEPHONE AND TELEGRAPH APPARATUS					
	Materials, parts, containers, and supplies		(X)	5 638.8	(X)	3 444.1
	Mill shapes and forms, except castings and forgings:					
	Carbon steel:					
331011	Bars and bar shapes	1,000 s tons	*9.1	3.8	4.7	2.5
331012	Sheet and strip	do	36.2	21.7	(D)	[6]
331067	All other carbon steel mill shapes and forms	do	(S)	7.9	(S)	[6]27.2
	Alloy steel, except stainless:					
331021	Bars and bar shapes	do	5.8	5.8	(S)	11.9
331029	All other alloy steel mill shapes and forms	do				
	Stainless steel:					
331033	Sheet and strip	do	(S)	5.7	(D)	[7]
331050	All other stainless steel mill shapes and forms	do	(S)	1.1	(S)	[7]2.2
	Insulated wire and cable, except magnet wire:					
335792	Copper (quantity of copper content)	mil lb	*50.1	58.0	*29.5	56.1
335793	Aluminum (quantity of aluminum content)	do				
335770	Magnet wire	do	6.2	12.1	9.1	18.0
	Copper and copper-base alloy:					
335728	Bare wire (for electrical conduction only)	do	**3.5	5.8	(S)	2.8
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes	do	[9]	[9]	(D)	[8]
335143	Plate, sheet, and strip, including military cups and discs	do	4.7	11.8	(D)	[9]
335152	Pipe and tube	do	[9]6.0	[9]6.0	(S)	[9]40.3
	Aluminum and aluminum-base alloy:					
335301	Sheet, plate, and foil	do	*3.6	4.4	4.0	3.0
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc.	do	**4.8	5.7	(S)	3.6
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.)	do	*1.6	2.3	(S)	2.6
	Castings (rough and semifinished):					
332011	Iron (gray and malleable):					
	Purchased	1,000 s tons	[10]	[10]	(X)	[11]
	Produced and consumed	do	–	(X)	(X)	(X)
332045	Steel:					
	Purchased	do	[10]2.4	[10]2.5	(X)	[11]
	Produced and consumed	do	–	(X)	(X)	(X)
336100	Aluminum and aluminum-base alloy:					
	Purchased	mil lb	**2.9	6.6	(S)	9.2
	Produced and consumed	do	–	(X)	(S)	(X)
336200	Copper and copper-base alloy:					
	Purchased	do	(S)	.4	(X)	[11]
	Produced and consumed	do	–	(X)	(X)	(X)
336902	Other nonferrous:					
	Purchased	do	**5.9	4.8	(D)	[11]
	Produced and consumed	do	–	(X)	(D)	(X)
335609	Nonferrous metal mill shapes and forms, except copper and aluminum	1,000 s tons	(D)	[12]	(D)	[11]
333970	Nonferrous metal refinery shapes, except precious metals	do	(D)	[12]	(D)	[11]
333903	Precious metals, all forms, including ingot, sheet, strip, solder, plating, electrodes, etc.	1,000 troy oz	(D)	[12]	(D)	[11]
339913	Ferrite (powders and paste)		(X)	[12]	(X)	[11]
345001	Bolts, nuts, screws, washers, rivets, and screw machine products		(X)	80.3	(X)	30.0
364300	Current-carrying wiring devices		(X)	64.2	(X)	59.6
367010	Electron tubes, except X-ray:					
	Purchased	millions	(D)	[12]	(D)	[11]
	Produced and consumed	do	–	(X)	(D)	(X)
367408	Semiconductors:					
	Purchased	do	(S)	335.8	(D)	[11]
	Produced and consumed	do	(S)	(X)	(D)	(X)
367500	Capacitors for electronic circuitry		(X)	140.9	(X)	[11]
367600	Resistors for electronic circuitry		(X)	84.0	(X)	75.1
367900	Other electronic components and accessories, n.e.c.		(X)	836.6	(X)	323.1
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes	mil lb	84.4	66.7	(D)	[11]
307903	Plastics products consumed in the form of sheets, rods, tubes, and other shapes		(X)	39.5	(X)	[11]
970099	All other materials and components, parts, containers, and supplies		(X)	[13]3 211.3	(X)	[11]2 620.7
971000	Materials, parts, containers, and supplies, n.s.k.[2]		(X)	613.1	(X)	156.2
	INDUSTRY 3662, RADIO AND TV COMMUNICATION EQUIPMENT					
	Materials, parts, containers, and supplies		(X)	10 742.9	(X)	4 572.6
	Mill shapes and forms, except castings:					
	Carbon steel:					
331012	Sheet and strip	1,000 s tons	(S)	12.7	38.1	13.0
331011	Bars and bar shapes	do	**5.4	9.1	13.3	4.7
331015	Structural shapes	do	(S)	3.2	(S)	2.6
331017	Wire and wire products	do	(S)	4.2	(S)	2.8
331056	All other carbon steel mill shapes and forms	do	(S)	11.8	(S)	2.7
	Alloy steel, except stainless:					
331021	Bars and bar shapes	do	**1.5	3.8	**3.2	3.3
331029	All other alloy steel mill shapes and forms	do	**3.9	8.2	**5.6	5.1
	Stainless steel:					
331033	Sheet and strip	do	(S)	6.0	(S)	2.7
331050	All other stainless steel mill shapes and forms	do	*7.4	25.3	**4.8	7.3
	Insulated wire and cable, except magnet wire:					
335792	Copper (quantity of copper content)	mil lb	(S)	49.3	(S)	35.4
335793	Aluminum (quantity of aluminum content)	do	(S)	12.3	(S)	4.0
335770	Magnet wire	do	(S)	6.3	**5.8	7.9

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1982 and 1977—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982 Quantity[1]	1982 Delivered cost (million dollars)	1977 Quantity[1]	1977 Delivered cost (million dollars)
	INDUSTRY 3662, RADIO AND TV COMMUNICATION EQUIPMENT—Con.				
	Mill shapes and forms, except castings:—Con.				
	Copper and copper-base alloy:				
335728	Bare wire for electrical conduction only ---- mil lb	(S)	9.2	**2.9	3.7
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ---- do	(S)	6.3	(S)	3.7
335143	Plate, sheet, and strip, including military cups and discs ---- do	(S)	3.2	1.6	3.0
335152	Pipe and tube ---- do	(S)	3.1	1.9	3.0
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil ---- do	(S)	34.0	29.8	27.2
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ---- do	(S)	20.0	**17.5	17.5
335008	All other aluminum mill shapes and forms ---- do	**19.6	36.0	**6.7	6.6
	Castings (rough and semifinished):				
332011	Iron (gray and malleable):				
	Purchased ---- 1,000 s tons	(S)	11.8	(X)	[13]
	Produced and consumed ---- do	(S)	(X)	(X)	(X)
332045	Steel:				
	Purchased ---- do	(S)	11.4	**4.2	12.5
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
336100	Aluminum and aluminum-base alloy:				
	Purchased ---- mil lb	(S)	74.8	(S)	51.4
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
336200	Copper and copper-base alloy:				
	Purchased ---- do	(S)	1.4	(S)	2.9
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
336902	Other nonferrous:				
	Purchased ---- do	(S)	7.9	(X)	[13]
	Produced and consumed ---- do	(S)	(X)	(X)	(X)
333903	Precious metals, all forms (including ingot, sheet, strip, solder, plating, electrodes, etc.) ---- 1,000 troy oz	(S)	18.9	(S)	10.9
333977	Germanium ---- 1,000 lb	**24.6	5.9	(S)	2.0
335616	Nickel and nickel-base alloy mill shapes and forms ---- mil lb	(S)	2.3	(Z)	1.8
335691	Tantalum mill products ---- 1,000 lb	(S)	(D)	(Z)	(Z)
335693	Molybedenum, rolled, drawn, or extruded ---- mil lb	(S)	(D)	(S)	.1
335733	Tungsten wire ---- mil meters	(S)	.1	(Z)	(Z)
339913	Ferrites (powder and paste) ----	(X)	6.7	(X)	1.7
339915	Metal powders ---- mil lb	(S)	2.1	.5	.6
346901	Metal stampings ----	(X)	68.5	(X)	41.7
344401	Sheet metal products, except stampings ----	(X)	134.4	(X)	78.8
345001	Bolts, nuts, screws, washers, rivets, and screw machine products ----	(X)	99.4	(X)	76.8
357341	Electronic computing equipment and parts ----	(X)	222.6	(X)	[13]
	Fractional horsepower electric motors (less than 1 hp):				
362110	Timing motors, synchronous and subsynchronous:				
	Purchased ---- thousands	(S)	20.2	(S)	16.3
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
362115	Other fractional horsepower electric motors, excluding timing motors:				
	Purchased ---- do	(S)	16.6	(S)	20.8
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
364300	Current-carrying wiring devices ----	(X)	55.9	(X)	30.0
365150	Loud speakers, microphones, and tuners (all types) ----	(X)	23.6	(X)	[14]30.0
366200	Electronic communication equipment ----	(X)	386.3	(X)	[14]253.0
367010	Electron tubes, except X-ray:				
	Purchased ---- millions	(S)	147.7	(S)	84.5
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
367400	Transistors, diodes, and rectifiers:				
	Purchased ---- do	(S)	304.0	(S)	189.4
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
367411	Integrated circuits:				
	Purchased ---- do	(S)	473.4	(S)	252.1
	Produced and consumed ---- do	(S)	(X)	(S)	(X)
367501	Capacitors for electronic circuitry ----	(X)	158.1	(X)	118.1
367601	Resistors, for electronic circuitry ----	(X)	130.1	(X)	71.7
367700	Coils, transformers, reactors, and chokes for electronic circuitry ----	(X)	129.1	(X)	93.8
367901	Fabricated electron tube parts, except blanks ----	(X)	6.6	(X)	5.7
367903	Electronic components and accessories, except electron tube parts, including slide switches, printed circuit boards, antennas, modules, dial assemblies, etc. ----	(X)	855.9	(X)	553.1
382501	Electrical instrument mechanisms and meter movements, including instruments relays ----	(X)	64.0	(X)	51.5
383250	Optical instruments and lenses, except sighting, tracking, and fire control ----	(X)	30.0	(X)	[13]
251700	Wood TV, radio, stereo, and sewing machine cabinets ---- thousands	87.2	2.7	(X)	[13]
260091	Paper and paperboard containers, including shipping sacks, and other paper packaging supplies ----	(X)	32.8	(X)	25.3
281995	Silicon, hyperpure ---- 1,000 kilograms	(S)	4.6	(D)	(D)
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., excluding sheets, rods, tubes, and shapes ---- mil lb	(S)	12.0	(S)	16.4
307902	Fabricated plastics products, except gaskets, hoses, and belting ----	(X)	77.2	(X)	[14]39.0
	Glass and glass products:				
322923	Tube blanks, except color TV picture ----	(X)	2.4	(X)	[15]
322924	Color TV picture tube blanks ----	(X)	(D)	(X)	[15]2.0
320311	Other than tube blanks ----	(X)	11.1	(X)	4.3
329905	Mica ---- 1,000 lb	(S)	.6	(D)	(D)
970099	All other materials and components, parts, containers, and supplies ----	(X)	4 340.9	(X)	[13]1 539.2
971000	Materials, parts, containers, and supplies, n.s.k.[2] ----	(X)	2 521.3	(X)	717.0

See footnotes at end of table.

Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[1]For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[2]Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

[3]For 1977, material codes 331020 and 331033 were included with material code 331050.

[4]For 1982, material codes 331020, 331033, 331050, 335301, 335405, 335008, 339913, 367012, and 282104 are included with material code 970099 to avoid disclosing data for individual companies.

[5]For 1977, material codes 367902 and 970099 were combined to avoid disclosing data for individual companies.

[6]For 1977, material code 331012 was combined with material code 331067 to avoid disclosing data for individual companies.

[7]For 1977, material code 331033 was combined with material code 331050 to avoid disclosing data for individual companies.

[8]For 1977, material codes 335102 and 335143 were combined with material code 335152 to avoid disclosing data for individual companies.

[9]For 1982, material code 335102 is combined with material code 335152 to avoid disclosing data for individual companies.

[10]For 1982, material code 332011 is combined with material code 332045 to avoid disclosing data for individual companies.

[11]For 1977, material codes 332011, 332045, 336200, 336902, 335609, 333970, 333903, 339913, 367010, 367408, 367500, 282104, and 307903 were included with material code 970099.

[12]For 1982, material codes 335609, 366970, 333903, 339913, and 367010 are combined with material code 970099 to avoid disclosing data for individual companies.

[13]For 1977, material codes 332011, 336902, 357341, 383250, and 251700 were included in material code 970099.

[14]From 1977 Census of Manfactures Supplemental inquiry: Consumption of Materials, Parts, Containers, and Supplies During 1977 (Form MA-131).

[15]For 1977, material code 322923 was included with material code 322924.

APPENDIX A.
Explanation of Terms

This appendix is in two sections. Section 1 includes items which were requested of all establishments that were mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) that were not included on the report forms but were derived from information collected on the forms. Section 2 covers supplementary items that were requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in tables 3c and 3d of this report.

SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

Number of establishments and companies—As discussed in the Introduction, a separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operates at different physical locations, even if the individual locations are producing the same line of goods, a separate report was requested for each location. If the company operates in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on the number of custodial employees, capital expenditures, inventories, or any shipments from inventories during the portion of the year the plant was in operation.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction to Part 1 of the General Summary subject report.

Employment and related items—The regular report forms requested separate information on production workers as of a payroll period for each quarter of the year and on other employees as of the payroll period which included the 12th of March.

All employees—This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period ending nearest the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production workers—This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All other employees—This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office function, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment who are engaged in the construction of major additions or alterations to the plant and who are utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls was also requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multiestablishment companies. However, these figures are not included in the totals for individual industries shown in this report. They are included in the general summary and geographic area reports and in the final bound volumes as a separate category.

Payrolls—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1982. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers

of corporations, but excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payroll of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' Social Security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

Production-worker hours—This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

Cost of materials—This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (1) all raw materials, semifinished goods, parts, components, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year, (2) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

Specific materials consumed—In addition to the total cost of materials, which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Information on the specific materials consumed is shown in table 7 if appropriate to the industry. Establishments consuming less than a specified amount (usually $10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the Introduction for the importance of administrative records in the industry.)

Value of shipments—This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further processing. Included are all items made by or for the establishments from materials owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of "all other costs" (including company overhead) and profit. (See discussion of duplication of data below.)

Individual products—As in previous censuses, data were collected for almost all industries on the quantity and value of individual products shipped. In the 1982 census program, information was collected on the output of approximately 11,000 individual product items. The term "product," as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 items; whereas, "motor gasoline" was reported as a single item.

Approximately 6,000 of the product items were listed separately on the 1982 census report forms. Data for about 5,000 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1982 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a) together with the tieline total value collected in the census for reconciliation purposes.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1977 information is presented for most products.

Typically, both quantity and value of shipments information was collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers was also collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant was collected. Typically, the information on production was also collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

Classes of products—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the

individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1982 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

Duplication in cost of materials and value of shipments—The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication, since the products of some industries are used as materials by others. With some important exceptions, such as for motor vehicles and parts, this duplication is not significant at the four-digit industry level. However, it is significant at the two-digit and three-digit industry group level because these totals often include industries that represent successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the "Food" group and the addition of pulp mills to paper mills in the "Paper and Allied Products" group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the census of manufactures.

Value added by manufacture—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

Because of the change in instructions for reporting inventories for 1982, the 1982 figure for value added is not strictly comparable to prior-year data. This is explained more fully in the inventories section below.

"Value added" avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

New and used capital expenditures—For establishments in operation and establishments under construction but not yet in operation, manufacturers were asked to report their new expenditures for (1) permanent additions and major alterations to manufacturing establishments, and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

The totals for new expenditures exclude that portion of expenditures leased from nonmanufacturing concerns, new facilities owned by the Federal Government but operated under contract by private companies, and plant and equipment furnished to the manufacturer by communities and nonprofit organizations. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers were also requested to report the value of all used buildings and equipment purchased during the year at the purchase price. For any equipment or structure transferred to the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; i.e., it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form and is subject to sampling error (see table 3d). The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in both tables 3a and 3d. The figure in table 3a is a census universe total and may differ from the results of the ASM sample shown in table 3d. Since the figures in table 3d are subject to sampling error, they are not considered as reliable as the universe figures.

End-of-year inventories—Respondents were asked to report their 1981 and 1982 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown in footnote 4 of table 1a. However, the end-of-1981 figure shown in this footnote may differ from the corresponding value published as part of the 1981 Annual Survey of Manufactures.

This difference at the four-digit SIC level is due primarily to the effects of industry shifts. As described in the Industry Classification of Establishments section of the Introduction, ASM noncertainty plants are allowed to shift from one industry to another in a census year; whereas, they are "frozen" in a particular industry in ASM years. Other explanations for this difference include the effects of sampling and processing errors and revisions to end-of-1981 data reported by respondents.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by another establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw

materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for individual industries, industry groups, and "all manufacturing," which are aggregates of figures reported by establishments in specified industries.

Specialization and coverage ratios—These items are not collected on the report forms but are derived from the data shown in table 5b. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

As noted in the Introduction, an establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in tables 1a through 5a and data on product shipments shown in tables 6a through 6c.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

Supplemental labor costs—Supplemental labor costs are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records do not generally provide reliable figures on net employee benefits of these types.

Cost of purchased services—ASM establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, and communication services. Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment, such as painting, roof repairs, replacing parts, and overhauling equipment. Such payments made to other establishments of the same company and for repair and maintenance of any leased property are also included. Extensive repairs or reconstruction that were capitalized are considered capital expenditures for used buildings and machinery and are, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force are also excluded.

The response coverage ratio shown in table 3d for each of the three types of purchased services listed above is a measure of the extent to which respondents reported for each item. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight; see section 3) for those ASM establishments that reported the specific inquiry to the weighted total employment for all ASM establishments classified in the industry.

Electric energy used for heat and power—Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy and quantity of generated-less-sold electric energy were collected only on the ASM forms. The cost and quantity of purchased electric energy represent the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

Beginning- and end-of-year depreciable assets—The data encompass all fixed depreciable assets on the books of establishments at the beginning and at the end of the year. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets, including inventories and intangible assets, such as patent rights and royalties. Also excluded are land and depletable assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year, rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress. In addition, respondents were requested to make certain that assets at the beginning of the year plus new and used capital expenditures, less retirements, equalled assets at the end of the year.

New and used capital expenditures—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)

Breakdown of new capital expenditures for machinery and equipment—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement. Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

The "not specified by kind" or n.s.k. item for expenditures for new machinery and buildings, shown in table 3d, represents the total machinery and equipment expenditures for establishments that did not break down their expenditures for the three specific categories. This means that for most industries the specific categories are understated.

Retirements—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1982. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent was also requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

Rental payments—This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets, and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company, and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

Depreciation charges—This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

APPENDIX B.
Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies

DESCRIPTION OF SURVEY SAMPLE

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 55,000 manufacturing establishments selected from a total of about 225,000 establishments. These 225,000 establishments represent all manufacturing establishments of multiunit companies and all single-unit manufacturing establishments with five employees or more tabulated in the 1977 Census of Manufactures. This mail portion is supplemented by a Social Security Administration list of new manufacturing establishments opened after 1977. The individual establishments were defined as the sampling unit for this sample. This is a change from the previous ASM sample when companies were used as the sampling unit. The implication of this change is that the probability of selection of any establishment relates only to the size of the establishment itself and is independent of the size of the company with which the establishment is affiliated. The efficiencies associated with the change to an establishment sample have made it possible to reduce the mail sample panel from 70,000 establishments in 1978 to 55,000 establishments in the current panel.

The nonmail portion of the survey includes all single-unit establishments that were tabulated with less than five employees in the 1977 Census of Manufactures. Although this portion contained approximately 125,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of other Federal agencies. This administrative record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under special conditions, which safeguard the confidentiality of both tax and census records. Estimates for data for these small establishments were developed using industry averages in conjunction with the administrative information.

The corresponding estimates for the mail and nonmail establishments were added together, along with the adjusted base-year differences as defined in Description of Estimating Procedures below. The remaining description of the survey sample relates only to the mail portion of the ASM sample.

All establishments with 250 employees or more in the 1977 census were included in the survey panel with certainty. These establishments collectively account for approximately 65 percent of the total value of shipments for manufacturing establishments in the 1977 census. Smaller establishments were sampled with probabilities ranging from 1.000 down to 0.005 in accordance with mathematical theory for optimum allocation of a sample.

The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. For establishments included in the 1977 Census of Manufactures, the measure of size depended directly upon each establishment's 1977 product class values and the historic variability of the year-to-year shipments of each product class. Roughly equivalent measures of size were assigned to postcensus birth establishments based on their industry codes and anticipated payroll and employment.

The method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight to differences in employment, value added, and other general statistics, for these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of establishments into and out of a given sample panel without introducing a bias into the survey estimates.

DESCRIPTION OF ESTIMATING PROCEDURES

Most of the ASM estimates for the years 1978-1981 were computed using a modified "difference estimate" formula. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1977 census published number for an item total and the linear ASM estimate of the total for 1977. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

This base-year difference was then adjusted to reflect the estimated growth at the four-digit or, in the case of product classes, five-digit based Standard Industrial Classification (SIC) level from 1977 to the year of the survey; for example, 1981. It should be noted that due to processing constraints, the growth factors lagged one year; i.e., if 1981 is the survey year, they were not based on the estimated growth from 1977 to 1981 but rather the growth from 1977 to 1980. This one-year lag had negligible effect on the estimates, particularly at the total manufacturing level where the adjusted base-year difference accounted for less than 1 percent of the estimate for total value of shipments.

These adjusted base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1978-1981. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.

The 1982 sample data included in table 3d were also developed using difference estimates. However, since the universe totals for the census year (1977 or 1982) were not known, a modification of the procedure described above was necessary. For each item in table 3d, except purchased services and breakdown of expenditures for new machinery and equipment (see further description in appendix A, section 2), linear

estimates of the publication totals from the ASM mail sample were adjusted by the difference between imputed census totals and the corresponding ASM mail sample estimates of these imputed totals. These imputed totals are obtained by applying industry average ratios to control item values at the establishment level. For example, an imputed total beginning assets figure is obtained by multiplying each establishment's total value of shipments by the industry (four-digit SIC) average for the ratio of beginning assets to shipments.

Separate estimates for the nonmail establishments were not developed. However, their contribution to the publication estimates is reflected in the difference adjustment.

The method of inventory valuation percentages included in table 3c was developed using both complete census information and ASM estimates. The percentages for the four major categories (LIFO, non-LIFO, valuation method not reported, and LIFO reported without associated value and reserve) were derived from the complete census and correspond to the values included in table 3d. The percentages for the specific non-LIFO methods of valuations (FIFO, average cost, specific costs, etc.) are ratio estimates developed from the ASM in conjunction with the census universe estimate for the total of the non-LIFO methods.

QUALIFICATIONS OF THE DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sampled lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the differences between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of the estimates.

The particular sample selected for the ASM is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. Except for table 3c, they are presented in the form of relative standard errors, the standard errors divided by the estimated values to which they refer. In table 3c, "absolute" standard errors of the estimates are presented.

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
2. From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown as 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total and about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors would also occur if a complete canvass were to be conducted under the same conditions as the survey.

Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.

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